DOCUMENT RESUME

ED 360 565 CE 064 384

TITLE Environmental Scanning for Occupational Education. A Facilitator's Guide. A Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area.

INSTITUTION Grand Rapids Community Coll., MT.; Kellogg Foundation, Battle Creek, Mich.; Michigan State Univ., East Lansing.

PUB DATE Mar 93

NOTE 319p.

AVAILABLE FROM Michigan Center for Career and Technical Education, 230 Erickson Hall, Michigan State University, East Lansing, MI 48824-1034 ($45).

PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.

DESCRIPTORS Community Colleges; *Demand Occupations; Educational Demand; Employment Opportunities; Employment Projections; *Environmental Scanning; *Labor Needs; *Models; Occupational Information; *Program Development; Resources; Supply and Demand; Two Year Colleges; *Vocational Education

ABSTRACT

This manual is designed to facilitate the planning and implementation of an environmental scanning project in Michigan's community colleges. (Environmental scanning is a systematic process for gathering and analyzing information about the external environment and relating it to an organization's internal environment.) This facilitator's guide is divided into four sections. The first section explains the organization of the guide. The second section provides an overview of the environmental scanning process to familiarize the reader with the terminology and concepts. Next, a five-step approach model is presented in order to assist users in planning, implementing, and integrating the environmental scanning process at their institutions. Specific actions to be taken, along with expected outcomes, are given for each of the steps (awareness, assessment, initiation, implementation, and integration). A worksheet and an illustration of the expected outcomes are provided. The following additional examples are provided in the 12 appendixes: model characteristics; tools, techniques, and matrices; time line; kick-off materials; concept mapping; analysis session materials; newsletters; concept map final reports; Delphi materials; recommendation writing materials; final recommendations; and summative evaluation report. A bibliography lists 18 sources and 14 resources on scanning information. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 360 565

ENVIRONMENTAL SCANNING FOR OCCUPATIONAL EDUCATION

A Facilitator's Guide

A Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area

Mark P. Champion, M.S.
Project Coordinator

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL IN **OTHER THAN PAPER COPY** HAS BEEN GRANTED BY

L Sandmann

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

March 1993

Supported by

Grand Rapids Community College and Michigan State University

© 1993

CE 064 324

BEST COPY AVAILABLE

ENVIRONMENTAL SCANNING FOR OCCUPATIONAL EDUCATION

A Facilitator's Guide

A Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area

Mark P. Champion, M.S.
Project Coordinator

March 1993

Supported by

Grand Rapids Community College and Michigan State University
© 1993

© 1993 Grand Rapids Community College and Michigan State University. Permission to duplicate for personal use is hereby granted.

ACKNOWLEDGMENTS

The development of **A Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area** is supported by **Michigan State University, W. K. Kellogg Foundation** and **Grand Rapids Community College**. The project is coordinated by steering committee members from *Michigan State University* : Lorilee Sandmann, Director of MSU West Outreach; and John MacKenzie, Associate Director, the Michigan Center For Career and Technical Education; and from *Grand Rapids Community College*: Till Peters, Dean of Occupational Education; Juan Olivarez, Dean of Institutional Research; Paula Stark, Executive Director of Strategic Planning, Ray Hoag, Chair of the Computer Applications Division; and Earlene Moore, Librarian. Phyllis Grummon served as the Research Assistant to the project during Phase I. Mark Champion served as Project Coordinator during Phases II and III.

EDUCATIONAL TECHNOLOGIES

The project relied on computer technology to communicate, collect, analyze and interpret information. The specific technology and applications are summarized in the table below. These products are referred to within the text and may be registered trademarks of their respective companies.

Technology	Application
Foxpro Data base Software	Collection of abstracts by scanners.
	Categorizing and sorting issues from scanned materials.
Concept Mapping Software	Clustering and prioritizing issues from two rounds of scanning.
Lotus 123 Software	Combine and prioritize top 15 issues for use in Delphi
Quattro Pro 4 Software	Preliminary analysis of Delphi results
Aldus Persuasion Software	Developed and sequenced full color presentation on the project.
Word Perfect Software	Developed written project materials including newsletters, reports, and this guide.
GRCC and MSU E-Mail Systems	Continued communication with participants.
SPSS Statistical Analysis Software	Correlation of responses on Delphi and other evaluations

Table of Contents

INTRODUCTION 1
- Background 1
- Highlights of the Project 2
- Project Coordination 2
- About This Guide 3

ENVIRONMENTAL SCANNING: AN OVERVIEW 6
- What Is Environmental Scanning? 6
- What Are the Benefits of Environmental Scanning? 7
- How Does Environmental Scanning Help to Meet the Planning Needs of Occupational Education? 8
- What Are the Basic Principles of Scanning? 9
- What Are the Components of the Scanning Process? 9
  - Information Gathering and Organization 9
  - Analysis 11
    - Concept Mapping 11
    - Multivoting 11
    - Delphi Survey 11
    - Data Base Searches 12
  - Reporting 12
    - E-Mail/Voice Mail 12
    - Mailings, Memos, and Fliers 12
    - Newsletters 13

BUILDING A CUSTOMIZED MODEL: A FIVE STEP APPROACH 14

STEP I: Awareness 18
- Establish a Need 18
- Identify Resources 23
- Establish a Steering Committee 28
- Develop Expertise 33

STEP II: Assessment 37
- Determine the Focus of the Scan 37
- Identify Resources for Information Gathering, Analyzing, and Reporting 40
- Construct a Time Line 46

STEP III: Initiation 51
- Introduce the Environmental Scanning Concept 51
- Design the Form Used to Abstract Information 57
- Select Materials to Be Scanned 63

Select Participants for the General Scanning Team 69
Plan the Environmental Scanning "Kick-off" 73

STEP IV: Implementation 78
Provide Orientation and Practice 79
Begin Scanning and Abstracting the Information 83
Collect and Organize the Information 88
Monitor and Troubleshoot the Process 93
Analyze the Data 99
Report the Results 105
Provide External Input and Validate the Results-A Delphi Survey 110
Make Recommendations 114

STEP V: Integration 120
Evaluate and Refine the Process 120
Institutionalize the Process 128
Start a New Cycle 131

Appendix 1: Model Characteristics A1-136

Appendix 2: Tools, Techniques, and Matrices A2-140

Appendix 3: Time Line A3-158

Appendix 4: Kick-Off Materials A4-162

Appendix 5: Concept Mapping A5-172

Appendix 6: Analysis Session Materials A6-178

Appendix 7: Newsletters A7-210

Appendix 8: Concept Map-Final Reports A8-214

Appendix 9: Delphi Materials A9-236

Appendix 10: Recommendation Writing Materials A10-264

Appendix 11: Final Recommendations A11-274

Appendix 12: Summative Evaluation Report A12-294

Bibliography and Environmental Scanning Resources B-306

List of Examples

EXAMPLE I:	Needs Statement	22
EXAMPLE II:	Participants and People to Keep Informed	26
EXAMPLE III:	Resources	27
EXAMPLE IV:	Steering Committee-Major Responsibilities	31
EXAMPLE V:	Project Coordinator-Major Responsibilities	32
EXAMPLE VI:	Resource List	35
EXAMPLE VII:	Purpose and Focus	39
EXAMPLE VIII:	Resources Available/Needed	45
EXAMPLE IX:	Time Line	49
EXAMPLE X:	Introduction to Scanning Information Sheet	55
EXAMPLE X:	Introduction to Scanning (Cont.)	56
EXAMPLE XI:	Abstract Form	62
EXAMPLE XII:	Print Media Survey	68
EXAMPLE XIII:	Scanning Team	72
EXAMPLE XIV:	Kick-Off Event Agenda	76
EXAMPLE XV:	Kick-Off Session Evaluation	82
EXAMPLE XVI:	Taxonomy for Abstract Form	86
EXAMPLE XVII:	Abstract Form Key	87
EXAMPLE XVIII:	Sample Data Base Report	92
EXAMPLE XIX:	Abstract Thank You/Abstract Receipt Report	97
EXAMPLE XX:	Summer Scanning Flier	98
EXAMPLE XXI:	Analysis Session Planning Sheet	104
EXAMPLE XXII:	Title Waves Excerpt	108
EXAMPLE XXIII:	Concept Map Results Excerpt	109
EXAMPLE XXIV:	Delphi Results Comparison	109
EXAMPLE XXV:	Recommendation Writing Agenda	117
EXAMPLE XXVI:	Draft Recommendation	118
EXAMPLE XXVII:	Summative Evaluation	124
EXAMPLE XXVII:	Summative Evaluation (Cont.)	125
EXAMPLE XXVII:	Summative Evaluation (Cont.)	126
EXAMPLE XXVII	Summative Evaluation (Cont.)	127
EXAMPLE XXVIII:	Recommendation for Anticipating the Future	130
EXAMPLE XXIX:	Recognition and Starting a New Cycle	134

List of Worksheets

Establishing the Need 20
Identification of Resources I 24
Establishing A Steering Committee 30
Developing Expertise 34
Determining the Focus of the Scan 38
Identification Of Resources II 43
Establishing a Time Line 48
Introducing The Environmental Scanning Process 54
Abstract Form Construction 61
Print Media Considerations 66
Scanning Team Selection 71
Kick-Off Planning 75
Kick-Off Checklist And Follow-Up 81
Abstract Form Modification 85
Data Base Set-Up And Data Entry 91
Monitoring and Troubleshooting 96
Analysis Session Planning 102
Establishing A Communications Network 107
External Validation Methods 112
Recommendation Writing 116
Evaluation And Refinement 122
Institutionalize The Process 129
Start A New Cycle 133

INTRODUCTION

I skate to where the puck will be . . .

Wayne Gretsky

Change is a constant in every region of Michigan as communities, institutions, and individuals strive to meet the challenges of a global marketplace, economic restructuring, and the move from machine to information age. These changes in the larger community, in turn, translate into changing expectations for community colleges. This facilitator's guide has been written to introduce the process of environmental scanning as an avenue for tracking and even anticipating this changing environment.

Background

Dr. Till Peters as Dean of Occupational Education at Grand Rapids Community College (GRCC) was acutely aware of the changing environment as his programs are directly linked to employers. He recognized that a monitoring of the social, technological, economic, environmental, political/legal, educational, and demographic trends and issues was critical to long range planning and anticipating the future in West Michigan.

A meeting with Dr. Lorilee Sandmann, Director of Michigan State University - West in Grand Rapids, and a futurist with extensive experience at major land grant institutions, was the catalyst for the development of a model-building environmental scanning process. A proposal was developed and accepted for an All University Outreach Grant at Michigan State University (MSU), funded through the W.K. Kellogg Foundation. Grand Rapids Community College's School of Occupational Education's provided additional funding. The proposal was awarded for the period June, 1991 through December, 1992 for $15,000. Subsequently, Grand Rapids Community College provided an additional $14,000 for the project.

Highlights of the Project

The purpose of the project was the development, local field testing, and dissemination of a replicative Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area. Environmental scanning is a systematic process for gathering and analyzing information about the external environment and relating it to an organization's internal environment. Environmental scanning is usually a key component in strategic planning. Effective scanning must be systematic and performed continuously to track the factors which tend to influence all organizations: Sociocultural, Technological, Economic, Environmental, Political/Legal, Educational, and Demographic. The model needed to be continuous, simple, quantitative, qualitative, able to detect "quantum jumps" of change, inexpensive, localized, anticipatory, replicable, relevant, and related to occupational education and training. Environmental scanning involved college staff in the process of assessing these factors as they relate to the college's internal environment and mission. This process provided one way for the institution to answer the planning question, "What's happening out there?"

Through the environmental scanning process trends and issues were identified and recommendations were made to the Dean of Occupational Education. Now specific forces may be tracked or researched as critical to the institution's future. In addition to these more tangible outcomes, other positive outcomes included cross-unit faculty/staff dialogue, a regional data base, and formalized linkages with others in the community who now think about the future occupational and training needs of the college's service area.

Project Coordination

A steering committee coordinated the project and included: Dr. Sandmann, Director, MSU West Outreach, and Dr. MacKenzie, Associate Director, Michigan Center for Career and Technical Education, Michigan State University. Committee members from Grand Rapids Community College, were Dr. Peters, Dean of Occupational Education; Dr. Juan Olivarez, Dean of Institutional Research; Paula Stark, Executive Director of Strategic Planning; Ray Hoag, Chair, Computer Applications Division, Earlene Moore, Librarian.

Phyllis Grummon, Research Assistant served on the committee during the first phase of the project and was responsible for writing the literature review and construction of the original model. Mark Champion was selected as Project Coordinator and was employed for twenty hours per week to manage the environmental scanning activities during the pilot project. The composition of the steering committee reflected the significant cooperation between MSU and Grand Rapids Community College.

About This Guide

This manual has been created to facilitate the planning and implementation of an environmental scanning project in any of Michigan's community colleges. The intended audience of the guide is the Dean of Occupational Education. The guide, however, could be used by any key decision maker to establish and implement an environmental scanning process. It was also recognized through our scan that the process illustrated in the guide has application in many areas of the community college and needs not be limited to occupational education.

This facilitator's guide is divided into several sections. The first section provides an overview of the environmental scanning process. The purpose of the overview is to familiarize the reader with the terminology and concepts of the process. Next, a five-step approach is presented in order to assist users in planning, implementing, and integrating the environmental scanning process at their respective institutions. Specific actions to be taken, along with expected outcomes, are given for each step. In addition, a worksheet and an illustration of the expected outcomes are provided. Additional examples are provided in the Appendices.

It is hoped that through the use of this facilitator's guide, the process of establishing an environmental scan can be simplified and customized. It should be kept in mind that the scanning process will vary with the resources available at a particular institution. We have

found the environmental scanning process a valuable addition to the occupational education planning process and are pleased to share it with you.

ENVIRONMENTAL SCANNING: AN OVERVIEW

What Is Environmental Scanning?

Environmental scanning is a systematic process for gathering and analyzing information about the external environment and relating it to an organization's internal environment. In other words, environmental scanning seeks out information that may affect an institution or department. A scan then examines that information's effect on the planning and operation of that unit. This process of analysis gives a sense of what the future may hold and how best to respond to it. Therefore, environmental scanning can be used as a key component in strategic planning.

Environmental scanning is used in many settings and for many purposes. The purpose for using the environmental scanning process at GRCC was to predict future jobs and job skills needed in the college's service area. The focus of this scan was the occupational education and training needs of the college's service area during the next five to ten years. Therefore, as we refer to environmental scanning in this guide we will assume that the user will in some way be involved with be occupational education.

General external factors which tend to influence all organizations fall into the following categories:

- Sociocultural
- Technological
- Economic
- Environmental
- Political/Legal
- Educational
- Demographic

By collecting, monitoring, and analyzing data in these "STEEPED" categories, we can gain valuable information about the external environment. Environmental scanning involves the School of Occupational Education in the process of assessing these factors as they relate to a school's internal environment and mission. Within these broad areas, specific forces may be tracked as critical to the future of occupational education. Scanning provides an avenue for the School of Occupational Education to better answer the question, "What's happening out there?"

What Are the Benefits of Environmental Scanning?

The systematic acquisition of information about the external environment has numerous uses beyond strategic planning and its associated budgeting process. J. F. Coates, one of the leaders in the field of issues management and strategic planning with businesses, offers the following list of general uses for scanning and the data it provides:

- to explore the effects of extending current policies;
- to widen the range of choices regarding current policy and to clarify their possible consequences;
- to provide early warning about potential or normally unanticipated difficulties;
- to provide an early alert to potential new opportunities;
- to explore unlikely but significant or seriously disruptive developments (so called "wild cards").

Craig Clagett, Director of Institutional Research at Prince George's Community College in Largo, Maryland lists six other ways in which scanning information can be used: unit operational planning, marketing, accreditation, fund raising and friend raising, proposal writing, and lobbying and public relations.

Environmental scanning can also have important secondary gains to a college in terms of its impact on the scanners themselves. According to Clagett, as people in a college participate in scanning processes, they begin to change in two ways.

- First, they tend to look at all information in relationship to how it may affect the college. This sense that almost anything in the world may eventually have an impact on the college, makes them broader thinkers and heightens their awareness of their role in the college's future;

- Secondly, people in the college begin to see that they must be flexible and able to change the way they do business quickly in order to respond to threats and opportunities.

In applying the environmental scanning process to the School of Occupational Education, our experience echoes that of Clagett. In addition, GRCC identified these benefits:

- The faculty and staff involved in the project experienced the feeling that what they read really mattered in terms of how it might affect the School of Occupational Education.

- Participants began to feel that they were part of a change process rather than on the outside of one.

- The identification of local and regional resources became helpful to the occupational program planning process on an ongoing basis.

- The members of the scan team developed a real sense of interconnectedness as they began to see how many issues touched areas outside of their own traditional area.

- All those involved in the project experienced a heightened awareness of the future.

How Does Environmental Scanning Help to Meet the Planning Needs of Occupational Education?

Environmental scanning can be applied broadly to an institution or it can focus on a particular segment of that institution. It is the goal of a scan for occupational education to develop a systematic approach to predicting the kinds of jobs and job skills that will be needed in the college's service area in the next five to ten years. A process was developed that would:

- Point direction for needs studies

- Determine regional growth industries
- Improve present programs
- Suggest programs for discontinuance
- Monitor emerging issues
- Sharpen knowledge of needed job skills

What Are the Basic Principles of Scanning?

The following underlying principles increase the likelihood that scanning will assist the School of Occupational Education meet its goals. A scan is most effective when it is:

Focused: As much as possible the scanning effort must be focused on those trends or factors which are most likely to affect the School of Occupational Education.

Continuous: It must be understood from the beginning that in order to be effective, scanning must be continuous. Development of a system which continuously collects and monitors trends and issues is most advantageous.

Staff Involved: As many people as possible need to be involved in the scanning effort. A feeling of ownership in the process must be present.

Integrated: Information gained from scanning must be integrated into the School of Occupational Education's decision making process. Those involved in the process must see that what they are contributing actually has an affect on the planning process.

What Are the Components of the Scanning Process?

Information Gathering and Organization

One of the major functions of this type of scan is to collect systematically information pertaining to occupational education. Information gathering is done by a group of participants known as the scanning team or scanners. The major role of the scanner is to seek and report information which may have an impact on the School of Occupational

Education. A special form is developed to collect abstracts from a wide variety of sources. The sources which can be scanned include:

- Print media
- Radio and television programs
- Conferences, speeches and seminars
- Networking contacts with business and industry

The scan should focus on local and regional information related to occupations needing more than a high school diploma, but less than a four year college degree. It is therefore important to stress local and regional information sources. Assigning such publications, events or local television programs to specific members of the scanning team can help to assure local and regional coverage. Examples of the types of local and regional publications are listed below:

- Major and secondary newspapers (Include cultural diversity in selection)
- Regional publications (e.g. Grand Rapids Magazine, Grand Rapids Business Journal)
- Michigan Employment Security Commission monthly and annual reports
- Chamber of Commerce newsletters and reports
- Meeting minutes of area economic development groups

It is also necessary to collect information from other geographic areas. Our steering committee found that international, national and even state data can be collected from a wide variety of sources which already suggest trend information at those levels. A research librarian can be an asset to the scan when it comes to locating sources such as on-line data bases and national trend publications. Although participants can abstract information from a

wide variety of sources, if the scanners concentrate on local and regional information which relate to the college's service area, the scan is more useful. Also, searching for information closer to home is a much better use of the scanners' valuable time.

Once the information has been collected, it must be organized into a useable form. Although abstracts can be manually filed and analyzed, the use of a computer data base to store the information is very helpful. Abstracts submitted during our scan were stored in a Fox Pro application which allowed the retrieval of abstracted information by STEEPED category designation, geographic origin, source, and summary. A data base which allows the input and retrieval of large text fields is recommended.

Analysis

Once the data are collected, the information must be analyzed for emerging trends and issues. The goal of such activity can vary from prioritizing the information to exploring its impact on the School of Occupational Education. A wide variety of analysis techniques can be used to do this. Several of the techniques used in GRCC's scan are briefly discussed below:

Concept Mapping: A computer software program from Concept Systems is used to take a group of seemingly unrelated issues and illustrate their relationships graphically. To create a map, participants of the scanning team examine the issues from the abstracts pertinent to occupational education, sort them into logical theme groups, and rate them as to their impact on occupational education. The data are then entered into the software program to create a map which shows clusters of related issues and their respective ratings.

Multivoting: Multivoting is a quick technique used to reduce a large number of issues into a workable number. First a group of participants discusses the issues at hand and combines similar issues. A new list is formed and each participant chooses one-third of the issues which he/she feels are the most important. The votes are tallied and the issues with fewer

than a predetermined number of votes are eliminated. The process is repeated until the desired number of issues is obtained.

Delphi Survey: The opinions of community leaders and faculty experts at other institutions can be integrated into the process by using the Delphi method. Several questions are constructed from the data analyzed by the scanners and sent to a group of selected participants. All responses from this first round are collated and returned to the participants who are asked to rate the responses. A Delphi survey can be done in several rounds and is complete when the desired amount of consensus is reached. A FAX machine greatly facilitates the process.

Data Base Searches: The data base constructed for the storage and organization of the information submitted by the scanners can also be used for a preliminary analysis of the data. The abstracts can then be searched for recurring themes, geographic area, or subject for example. A large amount of information can be derived from this type of analysis in a relatively short period of time.

Whatever technique or techniques are chosen it is important that those collecting the information be involved in the process of making sense of it. Involvement in the analysis of the information gives the scanners a sense of ownership in the process and also provides valuable input from those most affected by the information.

Reporting

Reporting is a major function of the scan that is too often overlooked. Participants in the process of environmental scanning as well as other stakeholders, must be kept informed about the project. It is especially important for those scanning and abstracting articles to readily see the results of their effort. Several vehicles can be used to achieve this vital communication effort.

E-Mail/Voice Mail: Using any system which does not require the participant to be present to receive the message is very helpful. Scanning responsibilities are usually added to already busy schedules. Electronic or voice mail can be used to notify participants of meetings, related events, and scanning results.

Mailings, Memos, and Fliers: Written letters and memos can be used to convey information to members of the scanning team when electronic methods are unavailable. Memos work well internally and mailings reach scanners and other interested stakeholders outside of the institution. A mailing and distribution list should be constructed early in the project. Memos and mailings can be used to announce specific events such as the kick-off or an analysis session. In addition, fliers can be used to motivate participants. For example, a humorous flier instead of a standard memo was used to create a desire in the scanners to continue to send in abstracts over the summer months.

Newsletters: A newsletter is an invaluable vehicle for keeping participants and other interested stakeholders informed about the progress and results of the project. A newsletter published regularly contains information about the abstracts being submitted and recognition for those involved in submitting them. In addition, the results of analysis sessions, pertinent information about area trends, and national environmental scanning news can be reported.

BUILDING A CUSTOMIZED MODEL
A FIVE STEP APPROACH

To construct an environmental scanning model that best meets the needs of the institution for which it is designed, a flexible process is vital. A step-by-step process which considers the goals and resources of a particular institution will ultimately be more useful to that institution. It is recommended that every school considering environmental scanning use this flexible method of model building to create a scanning system which accommodates the needs of that particular institution.

The process of bringing new methods for accomplishing goals into an organization always requires time and effort. Environmental Scanning for Occupational Education, A Review of the Literature and Model Development, illustrates how colleges have benefitted by investing that time and effort in environmental scanning. Some specific tools for scanning were described and presented in a chart which evaluates their ability to meet the needs of occupational education. Deans of occupational education who have read this guide, or learned about environmental scanning from others, may now be considering how to create a scanning effort in their unit. The sections, "Building a Customized Model," and, "Implementing a Customized Model," in the document cited above were used in the construction of the model used at Grand Rapids Community College. These sections are based on the work of Jerald Hage and Michael Aiken (1970) which describes stages an organization experiences when new methods or ideas are adopted.

There are five distinct steps in the process of change in an organization. The first three, awareness, evaluation, and initiation, are part of model building. The final two, implementation and integration, are part of model implementation. During model building, a dean needs to gain information about how his or her unit is presently gathering information about its environment, both internal and external (awareness). Then, consideration needs to be given to what tools from the matrices might be appropriate for the unit (assessment). Finally, plans for beginning a scanning process need to be formulated (initiation). During

model implementation, a dean's focus is on actually beginning the scan (implementation) and creating methods to include scanning in the ongoing activities of the unit (integration).

STEPS TO CHANGE

AWARENESS

ASSESSMENT

INITIATION

IMPLEMENTATION

INTEGRATION

This facilitator's guide offers a detailed look at the model building process. As you work through this guide, several resources in the Appendices will serve to assist you in the building of your environmental scanning process. Appendix 1 includes the Model Characteristics of the environmental scanning process for occupational education which were used as a guide during the building of GRCC's scanning system. Matrices and the description of the specific tools which can be used in building and implementing a scan are found in the Appendix 2.

The chapters which follow will guide you through the five steps needed to build a scanning model and to implement that model at your institution. Each step provides objectives, actions, and outcomes which will assist you in the process. Each section contains a worksheet which will enable you to work through the details of each step relative to your own institution. Also included in most sections are examples of outcome documents actually used at GRCC. Use these documents as a guide for the completion of that particular step. The intent of the five step format is to aid you in building and implementing your own system while providing you recommendations based upon GRCC's experience.

Each section is formatted in the following way:

OBJECTIVES
ACTIONS
OUTCOMES
EXAMPLES

As you establish your environmental scan it is important to emphasize that it is a developmental process which through trial and error, continuous feedback, and perseverance will provide a valuable learning experience for all those involved. The pilot conducted at GRCC highlights that there is as much value in the process as there is in the outcomes. In most cases you will need to adapt the process described to your specific environment.

STEP I: Awareness

The initial step of the scanning process begins with the development of an awareness that information collected in that process can help to improve the planning of occupational education. Since the Dean of Occupational Education is responsible for such a planning process, the Awareness Step is usually initiated at this level. However, a division chair, department head, or faculty member could ask similar questions and then enlist the support of the Dean. There are four major objectives in the Awareness Step:

OBJECTIVES

Participants/Planners will:

- Identify and establish a statement of need
- Identify a written list of resources (people, data, physical resources)
- Establish a steering committee
- Develop the expertise of the steering committee

ACTION:

Establish a Need:

The process starts with the identification of several areas where the ability to anticipate the future might improve the ability to plan occupational education. The Dean of Occupational Education can best provide this information. Use the worksheet on the following page to identify the need for an environmental scanning process at your institution. Through the examination of your planning process and the use of the worksheet it should become apparent whether your unit will benefit from an environmental scan. An example of a needs statement is provided in Example I, p. 22.

OUTCOMES:

- A written statement of need and rationale for implementing an environmental scanning project.

Establishing the Need
Worksheet

1. Does your occupational program anticipate the needs of its service area? If yes, how?

2. Is the reason for initiating a needs study based on community need?

3. Are the skills taught in your occupational programs relevant to today's job market?

4. How are job skills presently updated in your programs?

Establishing the Need (Continued)

5. What jobs and job skills will the college need to prepare students for in the next ten years?

6. Could an ongoing environmental scanning system answer these questions?

7. How will environmental scanning help meet the present needs of Occupational Education in this college?

GRAND RAPIDS COMMUNITY COLLEGE
ENVIRONMENTAL SCANNING FOR OCCUPATIONAL EDUCATION
NEEDS STATEMENT

In keeping with our Mission Statement to:

1. Provide education and training so that students can immediately enter and succeed in jobs upon successful completion of their educational programs.

2. Provide college level education so that graduates are able to easily transfer into certain related programs leading to a bachelor's degree at senior institutions.

3. Provide in cooperation with other parts of the College, such short term specialized training as necessary to help people prepare for specific jobs or improve their performance in them.

The Grand Rapids Community College School of Occupational Education is committed to meeting the occupational education and training needs of the college's service area based on the following principles:

Planning is anticipatory.

Needs studies and program implementation are based upon true community need.

Updating and upgrading of job skills are based upon current regional practice.

Monitoring of local and regional data, trends, and events is essential to effective planning.

An environmental scanning process which collects and analyzes information from local and regional sources will give the GRCC School of Occupational Education a better idea of what is taking place in the external environment. This is the environment into which we send our product, the student. If the School of Occupational Education does not anticipate the future needs of its students, it cannot truly meet their present needs.

EXAMPLE I: Needs Statement

ACTION:

Identify Resources:

After a clear need for environmental scanning has been established, the availability of resources should be assessed. What types of people, technology, data, and physical resources will be needed to implement an environmental scanning system at your institution? These considerations will be paramount in establishing a steering committee and laying the groundwork for the types of activities which are possible at your institution. It is also important to start to identify resources outside of your institution which may be helpful in starting and maintaining an environmental scan. Are there experts on futures studies in your area? Are there contacts or data sources in the community who can assist in the implementation of the scan? Would the involvement of major university or secondary vocational education program experts be helpful?

Use the worksheet provided to identify resources at your institution which will assist in building an environmental scanning process. Examples II, p. 26, and III on p. 27, illustrate resources needed and used during the scan at GRCC.

OUTCOMES:

- A list of people who should participate.
- A list of people who should be informed of the project.
- A list of technology, computer and graphics capabilities, communications capability, etc. that will be needed.
- A list of information sources and their locations in the institution and community.

Identification of Resources I
Worksheet

1. Who are the key decision makers and opinion leaders in the institution?

2. Are there individuals **within** the institution who have an interest in futures studies?

3. Are there individuals **outside** of the institution who have an interest in futures studies?

4. Who in the institution could assume the role of project coordinator?

5. Who are the potential customers or users of environmental scanning?

6. What are the computer and computer software resources available which would facilitate the environmental scanning process?

Resource I Worksheet (Continued)

7. What methods are available for communicating the progress, activities, and results of the environmental scanning process?

8. What other technological resources are available which could facilitate the scanning process?

9. What internal sources of information are available?

10. What external sources of information are available?

11. Are there any budget categories that can be flexible enough to include scanning activities?

12. What are the likely constraints which might inhibit the implementation of an environmental scanning pilot?

Environmental Scanning Participants

Dean of Occupational Education-GRCC
Dean of Institutional Research-GRCC
Executive Director of Strategic Planning-GRCC
Associate Director, Michigan Career Education and
Vocational Education Resource Center-MSU
Director of MSU-West, Grand Rapids
Occupational Division Chairs-GRCC
Business
Computer Applications
Health Occupations
Hospitality Management
Public Service
Technology
Faculty members from the Occupational Programs
Social Science Faculty
Secondary Vocational Education Administrators
Executive Director of Economic Development-GRCC
Director of Placement-GRCC
Occupational Counselor-GRCC
Research Librarian
Advisory Committee Members

Environmental Scanning Pilot-People to Keep Informed

GRCC Administrative Staff
Michigan Occupational Deans Administrative Council
Local, State, & Federal Legislators
Grand Rapids Chamber of Commerce-The Right Place
Grand Rapids Michigan Employment Security Commission
Upjohn Institute
Grand Valley State University-Office of Economic Expansion
Grand Valley Metro Council
Oakland Community College-Institutional Research
SDA and PIC

EXAMPLE II: Participants and People to Keep Informed

Technological and Communications Resources Available at GRCC

Computers: IBM and Compatibles

Software:
Word Perfect 5.1
Fox Pro - Data Base
Quattro Pro - Spreadsheet
Concept Mapping

Communications:
Computer Network-E-Mail System
The Point-GRCC Quarterly Publication
Create Project Newsletter (SCANOTES)

Information Sources Available

Internal:
Grad 1 Survey Results
Occupational Program Evaluations
Cross College Meetings with the President Reports
Information Available on Student Management System

External:
The Right Place: Economic and Economic Development Reports
Office of Economic Expansion-GVSU: KOM Databook
MESC: Monthly and Annual Planning Reports
Upjohn Institute for Employment Research Economic Forecast
Business Outlook for West Michigan-Upjohn Institute for Employment Research/Quarterly
Annual Book of Lists: Grand Rapids Business Journal
Grand Rapids Area Chamber of Commerce Business Directory
Regional Directory of Manufacturers

Major Publications:
Grand Rapids Press
Grand Rapids Business Journal
Advance-14 areas
Grand Rapids Magazine
Grand Rapids Parent
Grand Valley Metro Council Newsletter
Furniture World
Grand Rapids Times
El Hispano

EXAMPLE III: Resources

ACTION:

Establish a Steering Committee:

The project begins as a pilot or demonstration in order to assess its usefulness. The project can be implemented by a steering committee. Once you have explored the resources available at your institution, you should have a good idea as to who might work well on the committee. The make-up of the steering committee is critically important to the project's success. The broader the base of the steering committee, the more resources you bring to the planning process. This broad base can be advantageous in the early stages, but a wide range of talents and skills on the committee can also be helpful during implementation and integration of environmental scanning into the regular operations of an institution. The following representatives are useful when planning an environmental scanning system:

STEERING COMMITTEE REPRESENTATION

OCCUPATIONAL EDUCATOR
INSTITUTIONAL RESEARCHER
LEARNING TECHNOLOGIST
PROJECT COORDINATOR
RESEARCH LIBRARIAN
STRATEGIC PLANNER
FUTURIST

Representation from these areas should be a mix of administration, faculty and staff. In addition, we found that someone with an expertise in technological applications was an integral part of using technology to facilitate the process. Also, the involvement of personnel from a four-year institution, in our case Michigan State University, was a valuable contribution in terms of resources and perspective. A list of the major responsibilities of the steering committee is shown in Example IV, p. 31.

A project coordinator is essential to ensure project success. At least a half-time person is preferable for this position. The duties and responsibilities of the coordinator should be clearly established. The major responsibilities of a project coordinator are shown in Example V, p. 32.

Although the duties of a coordinator could be shared among the steering committee or with another person, it was beneficial to assign these duties to one individual during the GRCC pilot. A single coordinator seemed to allow for the best use of time and limited confusion among scanners as to who would answer their questions. It was essential for the project coordinator to seek direction from the steering committee during the planning and implementation of the process. The committee met twice a month in the planning stages and once a month during the scanning process. At times committee members would become involved in creating agendas for major meetings or reviewing reports and other documents before release to the scanners or other stakeholders.

OUTCOMES:

- A list of participants for the steering committee.
- A list of major responsibilities for the steering committee.
- An initial meeting date for the steering committee.
- A project coordinator with assigned responsibilities.

Establishing A Steering Committee
Worksheet

1. Who within the institution should participate on the steering committee? What will their individual roles be?

2. What are or will be the major responsibilities of the total steering committee?

3. What are or will be the major responsibilities of the project coordinator?

4. Who in the organization could fill the position of project coordinator? Could this role be shared? By whom?

Grand Rapids Community College
Environmental Scanning For Occupational Education
Steering Committee
Major Responsibilities

- Select the Project Coordinator
- Find and develop resources for environmental scanning
- Decide budgetary issues
- Set major time lines
- Determine major focus of the scan
- Provide guidance to the Project Coordinator concerning the project
- Participate as members of the Scanning Team
- Review incoming information from abstracts and other sources
- Conduct appropriate in-service and analysis meetings of the Scanning Team

EXAMPLE IV: Steering Committee-Major Responsibilities

Grand Rapids Community College
Environmental Scanning For Occupational Education
Project Coordinator
Major Responsibilities

Working closely with the Steering Committee, the Project Coordinator will:

- Develop the scanning system:
  - -Design abstract form
  - -Design a data base for abstract storage
- Establish the scanning team
- Plan and implement kick-off, orientation session
- Scan and abstract articles
- Collect, organize and perform initial analysis of abstracts
- Troubleshoot and monitor scanning system
- Investigate and report on new scanning and analysis techniques
- Communicate project's progress-newsletter, memos, etc.
- Plan and implement analysis sessions
- Report results
- Organize steering committee meetings
  - -Plan meeting schedule
  - -Make necessary arrangements
  - -Take and distribute minutes

EXAMPLE V: Project Coordinator-Major Responsibilities

ACTION:

Develop Expertise:

After the steering committee has been established, a shared learning experience aimed at bringing everyone to a common understanding of environmental scanning is needed. An experience such as a workshop given by someone who is experienced in environmental scanning is helpful in establishing a common knowledge base among the committee. This experience will be an asset as the steering committee begins Assessment Step activities such as planning the Kick-off session to orient potential scanners to the process. A list of possible resources is provided in Example VI, p. 35.

OUTCOMES:

- A list of possible resources who could provide a workshop in Environmental Scanning.

Developing Expertise
Worksheet

1. What environmental scanning activities are going on in the State?

2. Who are key contacts that could provide guidance?

3. What environmental scanning workshops might be available?

Environmental Scanning Resource List

James Morrison
Professor of Education
CB 3500, Peabody Hall
The University of North Carolina at Chapel Hill
Chapel Hill, North Carolina
Phone: (919) 966-1354

Lorilee Sandmann
Director of MSU-West
5 Lyon Street NW - Suite 750
Grand Rapids, MI 49503-3123
Phone: (616) 458-6805
FAX: (616) 458-6665

Environmental Scanning Consortium of Michigan
Martin A. Orlowski, Director
Institutional Planning and Analysis
Oakland Community College
27055 Orchard Lake Road
Farmington Hills, MI 48334
(313) 471-7746

EXAMPLE VI: Resource List

STEP II: Assessment

The steering committee plays a major role in planning the Initiation and Implementation Steps of the environmental scanning system. Once the Dean has completed the initial Awareness Step, the information gathered during that step can be shared with the steering committee. This information provides a starting point for the committee's planning activities. Below are the essential elements of the Assessment Step which largely relate to the actions of the steering committee.

OBJECTIVES

Participants/Planners will:

- Determine the focus of the scan
- Identify resources for information gathering, analyzing, and reporting
- Construct a time line for the implementation of the scan

ACTION:

Determine the Focus of the Scan:

Environmental scanning can be used in many ways and for many purposes. Consideration should be given to determine just how broad or focused a scan should be conducted. If the purpose of the scan has been well-defined first, the nature and focus of the scan are much easier to delineate. Example VII, p. 39 provides an example of a Purpose and Focus Statement.

OUTCOMES:

- A written statement of the environmental scan's focus. The statement should include the scan's purpose and any specific criteria which will limit the scan to that purpose.

Determining the Focus of the Scan
Worksheet

1. What is the purpose of conducting this environmental scan.

2. What geographic area will be covered by the scan?

3. What specific types of information and data will be scanned?

4. Are there any special criteria which define the focus of the scan?

GRAND RAPIDS COMMUNITY COLLEGE
ENVIRONMENTAL SCANNING FOR OCCUPATIONAL EDUCATION

PURPOSE AND FOCUS

PURPOSE: To predict future jobs and job skills that will emerge in the Grand Rapids area over the next 5-10 years.

SCANNING GUIDELINES

The environmental scan will seek out information:

1. In the Grand Rapids Area SMSA, which includes Kent, Ottawa, and Allegan counties.

2. In the following subject areas: Sociocultural, Technological, Economic, Environmental, Political/legal, Educational, and Demographic.

3. Pertaining to jobs and job skills requiring greater education than a high school diploma, but less than a four year college degree.

4. From state, national, and international sources in order to compare and contrast regional findings.

EXAMPLE VII: Purpose and Focus

ACTIONS:

Identify Resources for Information Gathering, Analyzing, and Reporting:

In order to start the scan, information must be collected. Decisions as to the kinds of information and how to collect and organize it are made by the steering committee. A decision about who will scan or collect the data must also be made. Do institutional resources warrant a single scanner or can the benefits to the institution be increased by using several scanners in the form of a scanning team? Once it is determined how the information will be brought into the scan, a list of possible analysis techniques should be compiled. Finally, a list of reporting mechanisms should be constructed in order to determine how and to whom the information will be disseminated. Many techniques can be used to achieve the three major components. A look at Appendix 2 will give you an idea of the types of tools available. Each institution must determine which tools fit their institutional resources. It will again be helpful to examine the list of resources compiled by the Dean during the Awareness Step. As you learn more about scanning, this list can be changed or expanded in response to your particular needs. The resources that were available or developed for the GRCC project are shown in Example VIII, p. 45.

In addition to determining resources, a decision should be made as to who will analyze the data collected during the information gathering stages of the process. Several techniques were used to analyze the data collected in GRCC's scan. In addition, several groups of people were involved in those analysis sessions. The first analysis session enlisted the entire group of scanners (Scanning Team) who used a computerized Concept Mapping technique. Concept mapping was used again in the second analysis session by just the steering committee. The scanning team was again called back to analyze the data from the first and second concept maps. The results of that meeting were then turned into a Delphi survey which elicited responses from key community and business leaders as well as educational leaders. All of the

scanners were then brought back together to look at the Delphi Results, and from those results the recommendations to the Dean were constructed.

It is recommended that you have the Scanning Team participate in the analysis process as much as possible. The benefits derived from the scanners' analyzing the data are numerous. Foremost, is to build on the feeling of ownership in the process. Next, it gives an opportunity for people from different areas of the institution to get together and share ideas and perspectives. Another notable benefit is that you can give those that may not have been your best scanners (data collectors) an opportunity to see what has been collected. As part of the analysis session they involve themselves in discussions which may stimulate their interest in actively scanning.

The major disadvantage of using the entire scanning team to analyze data is the problem of bringing such a diverse group together. Scheduling conflicts are unavoidable. Keeping this in mind when scheduling a session for the entire group can help. Even with scheduling conflicts an attendance rate of 75% of the group was achieved for each analysis session during the GRCC scan. In some cases it may be necessary to use the steering committee in analyzing the data when it is impossible to get the entire scanning team together or if a specific technique would work better with a smaller group. We used the steering committee for analysis during the summer months.

OUTCOMES:

- A list of tools necessary to implement the three components of scanning. (Tools used to gather and organize information, analyze it, and report the results.)
- A list of resources that must be obtained in order to initiate and conduct the scan.

Identification Of Resources II
Worksheet

1. What resources are currently **available** to facilitate the **gathering** of information for the scanning process?
   PERSONNEL:

   TECHNOLOGY:

2. What resources **must be developed** to facilitate the **gathering** of information for the scanning process?

3. What resources are **available** to facilitate the **analysis** of information gathered in the scanning process?

Resources (Continued)

4. What resources **must be developed** or obtained in order to facilitate the **analysis** of information gathered in the scanning process?

5. What resources are **available** to facilitate the **reporting** of information gathered in the scanning process?

6. What resources **must be developed** or obtained in order to facilitate the **reporting** of information gathered in the scanning process?

RESOURCES AVAILABLE/NEEDED TO CONDUCT AN ENVIRONMENTAL SCAN

Information Gathering:	Fox Pro Data Base-**Scan Application**
	Print Media Survey
	Abstract Form and Key
	Abstract Form and Key on Disk
Analysis:	Fox Pro Data Base
	Concept Systems Software
	Lotus or Quattro Pro
	Multivoting Procedure
	Delphi Questionnaire
Reporting:	College-wide Network with E-Mail
	Newsletter: *SCANOTES*
	Newsletter: *Title Waves*
	GRCC Distribution List
	External Stakeholders Mailing List

Bold-face items were purchased or created especially to implement the environmental scan at GRCC.

EXAMPLE VIII: Resources Available/Needed

ACTION:

Construct a Time Line:

After establishing the focus of the scan and determining the resources necessary to implement it, you should now be prepared to create a time line for carrying out the environmental scan. Typically a round of scanning should last several months and include all three components in the environmental scanning process (information gathering, analysis, and reporting).

The length of an environmental scan will vary and depends on the focus of the scan, the number of people involved, and the resources available at a particular institution. GRCC's scan was developed as an eighteen-month model. The project included many aspects that you will not need to address such as a literature search, model construction and dissemination, and the writing of the facilitator's guide.

The actual process of scanning was done on a twelve-month time line consisting of a planning period and an orientation followed by two months of information collection. The data collected were analyzed and reported. Information collection continued another three months and the data were again analyzed and reported. We held a third analysis session to synthesize the data from the first two analysis sessions. A Delphi panel outside of the School of Occupational Education was convened and surveyed via FAX in two rounds in order to collect information from community and educational experts. The Delphi was also used to validate the findings of the scan. A final analysis session was held to review the results of the Delphi and write final recommendations to the Dean of Occupational Education.

This twelve-month period could probably be compressed into nine months given that many of the above grant-related tasks would not have to be completed. It is also quite possible that a second attempt at scanning would not take nearly as long because many of the people involved in a second attempt would be familiar with the

process. In addition, less time is needed for the development of the resources noted in Example VIII, p. 45. Several discussions about the right time frame for the scan took place in our steering committee meetings. Options discussed included coordinating the scan with the occupational planning process, placing it within the confines of the academic year, and using a two year period in which the recommendations from the first nine to twelve months could be monitored and implemented during the following year.

The time line for the project is constructed during this step and should be distributed at the orientation meeting. A time line helps potential participants see where the project is going. The time line can be revised as the project progresses in order to further delineate what events will lead up to the final recommendations. An example of a shortened time line which includes major events is shown in Example IX, p. 49. Appendix 3 shows the entire time line in detail. As you examine these examples, keep in mind that each time line will most likely be unique to each institution.

OUTCOMES:

- A time line highlighting the environmental scanning process as it will be carried out at your institution.

Establishing a Time Line
Worksheet

1. In what time frame will the scan be conducted?

2. How many rounds of information gathering will be attempted?

3. How many analysis sessions will be conducted?

4. When will the analysis sessions occur?

5. Will the entire scanning team be involved?

6. When and to whom will reports of the environmental scan's progress be submitted?

7. What dates will the steering committee meet?

8. When will the recommendations be submitted? To whom?

EVENT	PERSON(s) RESPONSIBLE	TIME LINE D J F M A M J J A S O N D
Awareness	Dean of Occupational Ed.	**********
Orientation Planning	Steering Committee	*******
Kick-off Orientation	Scanning Team	*
Scanning Begins	Scanning Team	**********
1st Report Out	Project Coordinator	*
1st Analysis Session	Scanning Team	*
Scanning Continues	Scanning Team	**********
Abstract Report Out	Project Coordinator	*
Second Analysis Session	Steering Committee	*
Issue/Trend Statements Written	Steering Committee	*******
3rd Analysis Session	Scanning Team	*
Delphi Questionnaire Constructed and Administered	Steering Committee	***
Final Analysis Session-Recommendations	Scanning Team	*
Final Recommendations Drafted	Steering Committee and Scanning Team	**
Recommendations Submitted-Dean of Occupational Ed.	Project Coordinator	*
Evaluation Modification and Integration	Steering Committee	*****
FIVE STEP	TIME LINE	S1——S2—S3-S4————————————————S5—

EXAMPLE IX: Time Line

ENVIRONMENTAL SCANNING STEPS

S1 = AWARENESS **S2 = ASSESSMENT** **S3 = INITIATION**

S4 = IMPLEMENTATION **S5 = INTEGRATION**

STEP III: Initiation

Once the focus of the scan has been determined and a preliminary plan has been established, steering committee members can begin to work on the tasks which will lead to the actual implementation of the system. Initiation is the final step in model building and provides a bridge from planning to the actual implementation of the environmental scanning process. During this step, the planning group develops specific, concrete plans for implementation. They have previously chosen the tools they will use for information gathering, analysis, and reporting from the matrices (See Appendix 2). Now they will make plans for the who, what, where, when, and how of implementation. There are five essential objectives in the Initiation Step:

OBJECTIVES

Participants/Planners will:

- Introduce the environmental scanning concept to stakeholders
- Design the form used to abstract information
- Select materials to be scanned
- Select participants for the scanning team
- Plan the Environmental Scanning "Kick-off" Orientation

ACTION:

Introduce the Environmental Scanning Concept:

To this point, the Steering Committee has been a part of the Awareness and Assessment Steps and has firmly established the need for environmental scanning. It is now that we begin to think about bringing more people into the system in order to implement the process. The Dean of Occupational Education can be instrumental in

the identification of key leaders among the occupational divisions who could serve as scanners.

A meeting can be arranged to introduce scanning, but it works better if the introduction can be on the agenda of a regularly scheduled meeting. Using a regular meeting helps to prevent the idea from looking like just one more thing to do. If this meeting is arranged by the Dean of Occupational Education or a key leader with influence, the topic seems to be taken more seriously. Participants are given a brief explanation of the process and asked to think about becoming a scanner. They are also asked to think of other colleagues who may be interested in becoming involved in the project.

The main function of a scanner is to read articles and abstract the information pertinent to the goal of the scan. It is quite likely that many of your faculty and staff already read articles and journals in general subjects as well as those specific to their respective fields. The key is to get the information into a central repository where it can be shared and analyzed.

The steering committee must be sensitive to several factors. First, most people will be totally unfamiliar with the concept of environmental scanning. An effort must be made to introduce them to the concept and at the same time sell the process. An information sheet which defines environmental scanning and emphasizes the benefits of doing a scan can be created for this purpose. The information sheet is also an excellent way to convey the preliminary plan for the scanning process. An example of an information sheet has been included in this section on pp. 55-56.

The next hurdle, and probably the most serious one, is that of time. You most likely will be presenting a new concept to people who are already extremely busy. The steering committee needs to put a great amount of effort into making the environmental scanning process fit each individual's own work pattern. Emphasis is

on harnessing the information already gathered by the staff rather than adding new responsibility. The time-crunch factor is a consideration in the design of many parts of the model and should include such factors as the leveraging of technology to facilitate information collection and committing to as few meetings as possible. Unless such factors are dealt with, they are sure to become obstacles to an effective scanning process.

OUTCOMES:

- An information sheet which includes the basic definitions and benefits of scanning for use in sharing the concept with potential scanners. The sheet also includes the preliminary scanning process and answers the questions of how and when it will take place.

Introducing The Environmental Scanning Process
Worksheet

1. What questions will participants want answered during an introduction to environmental scanning?

2. What are your expectations of a scanner?

3. Briefly, how will the environmental scan occur at your institution?

4. What objections are potential scanners likely to voice?

A Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area

What is environmental scanning?
Environmental scanning is a systematic process for gathering and organizing information about the external environment and relating it to an organization's internal environment. Environmental scanning is used as a key component in strategic planning. The key to effective scanning is that it must be systematic (i.e. looking for information in the environment that the organization most needs to know) and performed continuously.

General factors which tend to influence all organizations fall into the following categories:

- Sociocultural
- Technological
- Economic
- Environmental
- Political/Legal
- Educational
- Demographic

Environmental scanning involves the School of Occupational Education in the process of assessing these factors as they relate to the school's internal environment and mission. Within these broad areas, specific forces are tracked which may be critical to the school's future. Scanning allows occupational education to best answer the planning question, "What's happening out there?"

What are the benefits of environmental scanning?
The systematic acquisition of information about the external environment has numerous uses beyond strategic planning and its associated budgeting process. J. F. Coates, one of the leaders in the field of issues management and strategic planning with businesses, offers this list of general uses for scanning and scanning information.

- to explore the effects of extending current policies;
- to widen the range of choices regarding current policy and to clarify their possible consequences;
- to provide early warning about potential or normally unanticipated difficulties;
- to provide an early alert to potential new opportunities;
- to explore unlikely but higher significant or seriously disruptive developments (wild cards)

Craig Clagett, Director of Institutional Research at Prince George's Community College in Largo, Maryland, lists six other ways in which scanning information can be used; unit operational planning, marketing, accreditation, fund raising and friend raising, proposal writing, and lobbying and public relations.

Environmental scanning can also have important secondary gains to a college. As people in a college participate in scanning processes, they begin to change in two ways.

- First, they tend to look at all information in relationship to how it may affect the college. This sense that almost anything in the world may eventually have an impact on the college makes them broader thinkers and heightens their awareness of their role in the college's future;

- Secondly, people in the college begin to see that they must be flexible and able to change the way they do business quickly in order to respond to threats and opportunities.

EXAMPLE X: Introduction to Scanning Information Sheet

How does environmental scanning help to meet the present and future needs of occupational education?
Most of the information above pertains to broad environmental scanning. It is the goal of a scan for occupational education to develop a systematic approach to predicting what types of jobs and job skills will be needed in the college's service area in the next five years. In examining the purpose of scanned information, these general areas were identified as meeting the present needs of occupational education. Environmental scanning data can be useful for:

- Initiating needs studies
- Determining regional growth industries
- Improving present programs
- Direction for the elimination of programs
- Monitoring of emerging issues.

What are the basic principles of scanning?
The following underlying principles increase the likelihood that scanning will help a college meet its goals.

FOCUS: As much as possible the scanning effort must be focused on those trends or factors which are most likely to affect the School of Occupational Education.

CONTINUOUS: It must be understood from the beginning that in order to be effective, scanning must be continuous.

INVOLVEMENT: As many people as possible need to be involved in the scanning effort.

INTEGRATED: Information gained from scanning must be integrated into the School of Occupational Education's decision making process.

What are the components of the scanning process?
INFORMATION GATHERING: One of the major functions of a scan is to systematically collect information pertaining to occupational education. A special form is developed to collect abstracts of various types of information. Various sources scanned included:

- Print Media
- Radio and television programs
- Conferences, speeches and seminars
- Networking contacts with business and industry

ANALYSIS: Once the data is collected, the information must be analyzed for emerging trends and issues. A wide variety of analysis techniques can be used to do this. As the scan progresses you will be introduced to several techniques that will assist in turning the data collected into useful information.

REPORTING: Reporting is a major function of the scan and is too often overlooked. Participants in environmental scanning must be kept informed about the project, but more importantly they must readily see the results of their efforts. Several vehicles can be used for these purposes.

How will environmental scanning take place in the School of Occupational Education?

- A scanning team made up of GRCC faculty and staff will be selected
- An orientation to environmental scanning will be held which will include tips on abstracting articles and other forms of information
- The team will begin "scanning" and submit abstracts to the project coordinator
- The abstracts will be entered into a data base for organization and analysis
- A monthly report of the scanning process will be made to the team
- Three analysis sessions will be held in order to allow the scanning team and community and business leaders to examine the findings of the scan
- A list of recommendations will be drafted and submitted to the Dean of Occupational Education

EXAMPLE X: Introduction to Scanning (Cont.)

ACTION:

Design the Form Used to Abstract Information:

In order for information to be gathered in a systematic way, a form for abstracting the essential data is constructed. Simplicity and flexibility are the key words when it comes to designing the abstract form. The form must be kept simple enough to be used by a variety of people, but still collect the needed information. The form should allow the project coordinator, or any other person who may transfer that data to a common data base, the ability to do so easily. An example of an abstracting form is presented in this section on p. 62.

Flexibility should be kept in mind at several levels. Flexibility in form design allows for changes in the form if it's not obtaining the needed information or producing the desired results. Adjustments can be made in the form as the scanners present feedback about its use and as the project coordinator and steering committee examines the information that is being submitted. Keeping the form on a word processor greatly facilitates these changes. The form included in this section experienced a revision immediately after the participants attempted to use it during the Kick-off. The willingness to make these changes helps to reinforce the steering committee's commitment to keeping the system as easy to use as possible.

Another facet of flexibility in form design concerns the ability of the form to collect information from a wide variety of media sources. As mentioned in the overview, print media is but one source of scanning information. Other sources include information from radio and television programs, seminars and conferences, and finally community and collegial networking contacts. The form should enable the user to easily record summary information and its implications regardless of the source of the information.

The last suggestion regarding the flexibility of the form concerns the issue of abstract submission. The goal is to make it as easy as possible for the "busy" scanner to get the information into the system. Making information gathering fit the individual work-style of the scanner should be a conscious consideration.

The ability to meet different styles was built into GRCC's system by giving scanners a choice when it came to the medium in which they submitted the abstracts. GRCC's form was made available via several different media. Abstracts could be submitted in the following ways.

DATA COLLECTION OPTIONS

- Handwritten hard copy using the form presented.
- A word processing document. The form was distributed on disk.
- On-line data base. The form could be accessed via a network data base.
- Actual articles submitted with the important information highlighted or written in the margins.

The number of options given to the scanners does help to achieve the goal of meeting work style needs, however, there are some drawbacks. Such a wide array of choices can make data entry difficult for the project coordinator. Highlighted submissions can be especially confusing. Comments are sometimes difficult to read and it may take the person inputting data a little longer to grasp the important information. Each individual institution needs to make a decision concerning the form in which the information will be accepted and how flexible it can be.

When built into the abstracting form, simplicity and flexibility allow individual scanners to fit abstracting into their already busy schedules. Most scanners will already be reading. What they need to be convinced of is the merit of collectively reading and reporting what they read. A realization that no one can read everything begins to occur, but participants also begin to realize they can read for each other. An article read by someone in the Technology Division may never be seen by a faculty member in the Health Division, but it might be just the solution to a problem occurring in that division. By sharing abstracts, information can begin to flow across divisions. The scanning and abstracting process can greatly facilitate the sharing of information.

One final issue concerning the construction of the form is that of a taxonomy for organizing the information. You will see a space for a "Subject" on the form shown on p. 62. Originally scanners were asked to categorize the information according to the occupational program to which it most related. A problem occurs in that some articles relate to several programs, even if the original abstract stated only one program as a subject.

A simpler system was adopted during the second round of scanning. The STEEPED categories discussed in the Overview on p. 6 were used as the basis for a taxonomy. Such a classification system helps to quickly categorize and organize data based upon a wide variety of areas. The STEEPED categories can also be subdivided by using key words as subtopics. For example, subcategories under "Education" may include "Secondary", "Community College", and "University". Using the STEEPED categories may or may not be appropriate for your scan. The taxonomy ultimately chosen will be dictated greatly by the particular focus of your scan.

OUTCOMES:

- A form for the purposes of abstracting information pertinent to the environmental scan.

Abstract Form Construction
Worksheet

1. What information will you want to know about the information being submitted? (Make sure to include aspects that will aid in the organization of the information collected.)

2. What do you want the scanners to tell you about the information scanned?

3. To whom is the form to be returned?

4. Will the project coordinator use a taxonomy to categorize the information?

5. Will the information be classified as a trend, event or issue?

GRAND RAPIDS COMMUNITY COLLEGE
ENVIRONMENTAL SCANNING FOR
OCCUPATIONAL EDUCATION AND TRAINING

ABSTRACT FORM

Subject: _____

Source: Publication ___ Conf./Meeting ____ Media ____ Network ____ Other ____

Title (Article, Session, Show): _____

Author/Speaker/Reporter: _____ Title/Role/Position: _____

Publication/Conf./Business: _____ Date: ___ Pages: __ Volume: __ No.: _

Local ____ Regional ____ State ____ National ____ International ____

Scanner's Name: _____ Date: _____

SUMMARY _____

MAJOR ISSUE-THREAT OR OPPORTUNITY _____

IMPLICATIONS FOR OCCUPATIONAL EDUCATION _____

RETURN TO MARK CHAMPION'S MAILBOX: GRCC INFORMATION CENTER
RM. 145, PHONE: 458-6805

For office use only: Trend _____ Issue _____ Event _____

Key Word: Primary _____ Secondary _____

EXAMPLE XI: Abstract Form

ACTION:

Select Materials to Be Scanned:

The purpose and parameters that you have set for the scan guide the selection of materials to be scanned. Making sure that the participants know exactly what kinds of information are needed helps to assure that you receive the needed data. As the saying goes "garbage in -- garbage out." Unless steps are taken to select pertinent information this "garbage" will begin to enter during the information gathering stage of environmental scanning.

Once you have decided how to present the purpose of the scan to participants, it may be helpful to discover what they are reading regularly. A print media survey can be useful in revealing the wide variety of scanner's interests as well as the wealth of information with which they come into contact.

The GRCC scan surveyed the entire list of potential scanners who would be invited to the Kick-off. The survey used is shown in Example XII, p. 68. It was discovered that approximately twenty potential participants were reading over 130 newspapers, magazines, and journals from international, national, state, regional, and local sources. Some print media sources were being read by more than one individual. Based on this survey, the steering committee decided to allow the scanners to continue reading what they had reported and instructed them to abstract articles that were only pertinent to the scan.

The decision to allow individual scanners to continue reading what they were already reading was in line with the flexibility desired in the model, however it did cause some problems. A closer look at the survey showed that the majority of the scanners were reading national publications. This concentration on national print media created a heavy national focus, which even much encouragement was not able to alter. Since the desired major focus was on regional and local information, the

national content of the abstracts tended to skew the data. Several members of the steering committee concentrated on local publications in order to lessen the effect of the national data.

There are several alternatives that can be used to improve this rather loose system. One modification is to survey the participants, but assign certain publications to a particular participant who is already reading them. Another method is to have the steering committee create a list of publications and other information sources which need to be scanned on a regular basis. The committee then asks the participants to abstract certain publications. Some publications, such as a local newspaper, might be large enough to split among several participants. For instance, someone could abstract pertinent articles from the business section, while another covers the main section of the paper.

There are many ways to assure that your scan will involve the right mix of print and other media. The methods will vary with your institution and the people participating in the scan. The most important thing that must be accomplished in assigning and monitoring the print media or any other information source abstracted is that the information reflects the goal of the environmental scan.

In addition to print media, other information sources should not be overlooked. Radio or television news or documentary type programs can be abstracted for relevant information. When participants in the scan attend conferences, the scanning form can be filled out to reflect information which may be useful to the scan. A source of information which should not be overlooked is networking contacts which your scanners may possess. Through the use of personal contacts which are most likely already occurring, valuable data can be collected from the community. All of these sources are helpful in gathering the information needed for a successful scan. You might even want to modify the print media survey in order to identify some of these

other information sources. Such a survey, for instance, could include information concerning television shows that air regularly - especially local and regional ones.

OUTCOMES:

- A print media survey constructed and administered.
- A strategy establishing what publications/media sources, etc. will be important to the scan and how they will be covered.
- A list identifying information sources other than print media.

Print Media Considerations
Worksheet

1. What mix of international, national, state, regional and local print media is necessary to accomplish the goals of the scan?

2. What local and regional publications should be covered?

3. Do the publications identified reflect regional cultural diversity? If not, what publications might be added?

Print Media (Continued)

4. Should a print media survey be used? If yes, what should it consist of?

5. Should specific publications be assigned to certain scanners? Which publications are critical?

6. What other media sources would be appropriate to the scan?

GRAND RAPIDS COMMUNITY COLLEGE
ENVIRONMENTAL SCANNING FOR
OCCUPATIONAL EDUCATION AND TRAINING

PRINT MEDIA SURVEY

Thank you for considering participation in the Environmental Scanning Pilot. In order to better fit the project requirements into your time schedule, this survey has been constructed to assess what you are already reading. Sources may include any type of print media such as **magazines, journals, newsletters, etc.** The scan is focused on changes in occupations in both Kent and Ottawa counties, but state, national and even international sources should be included in your list if you are reading these publications on a regular basis.

The last two questions will help us to better plan the workshop.

Please list the publications that you are currently reading.

International:

National:

State:

Regional/Local:

Have you seen the video presentation Discovering the Future: The Business of Paradigms by Joel Barker?

___ Yes ___ No

I will be attending the workshop on Friday, February 21, 1992 from 12 noon to 3:30 pm.

___ Yes ___ No Name _____

Thank you for your cooperation. Please return this form by February 19, 1992 to Mark Champion's mailbox in the Information Center, Rm. 145 Main. If you have questions please call me at 458-6805.

EXAMPLE XII: Print Media Survey

ACTION:

Select Participants for the General Scanning Team:

The scanning team is selected by the steering committee. Persons representing all occupational areas within the institution, as well as those stakeholders outside the institution, can be considered. An initial contact can be made by the project coordinator as part of the agenda during a regularly scheduled meeting such as an Occupational Council or Committee meeting. The coordinator contacts the participants following the meeting and asks them to commit to reading and abstracting publications relevant to the project. It is very helpful to have had some personal contact with the potential participants. Also, it is useful to ask these potential scanners about others inside and outside the institution who might be interested in taking part.

If there is not a regular meeting in which all personnel involved with occupational education come together, a special meeting can be called by the Dean of Occupational Education. The scheduling of such a meeting will depend upon the culture of your particular institution. An alternative to a meeting is to have the Dean or the project coordinator send a letter to potential scanners introducing the concepts of environmental scanning. A follow-up phone call is then made asking for a commitment to the project or at least their willingness to attend an orientation session.

GRCC's scanning group consisted of the following:

SCANNING TEAM MAKE-UP

- Occupational Faculty (Representative of All Occup. Div.)
- Social Science Faculty
- Advisory Committee Members
- Director of Job Placement
- Secondary Vocational Ed Directors
- Occupational Counselor
- Steering Committee Members

All contacts are invited to attend the Kick-off session and encouraged to contact the project coordinator with the names of others who may be interested in the environmental scanning project.

The content of your scanning team can vary especially if your focus is less broad. For example, if you were to scan just for future jobs and job skill needs in the region's health care industry, a much different scanning team make-up would be desired. However, even if the focus is specific to a certain occupational area, it is helpful to have scanners outside of that area. Perspectives from individuals outside of a particular field can be very useful when uncovering all the possibilities for the future.

OUTCOMES:

- A list of potential scanning team members who have shown an interest in the project or have committed to attending the Kick-off Session.

Scanning Team Selection
Worksheet

1. Who are the potential scanners within the School of Occupational Education?

2. Are there faculty and staff at the college other than those in occupational education who might have an interest in participating?

3. Are there members of advisory committees or other community and business leaders who might be interested in participating?

4. Is there anyone else who would make special contribution based on the focus of the scan?

GRAND RAPIDS COMMUNITY COLLEGE
ENVIRONMENTAL SCANNING MODEL FOR OCCUPATIONAL EDUCATION AND TRAINING
SCANNING TEAM

Business Division:	Velvie Green	Instructor
	Glenn Gelderloos	Instructor
Computer Application Division:	*Ray Hoag	Division Chair
	Ruth Kurlandsky	Assistant Chair
	Donald Meinke	Instructor
	Linda David	Community Council for Academic Computing
	George McCulloch	Community Council for Academic Computing
Health/Dental Division:	Bobbie Schrader	Division Chair
	Alice Donahue	Occupational Therapy Assisting-Instructor
	Donna Adams	Nursing Instructor
	Marilyn Smidt	Director of Nursing Programs
Hospitality Education Division:	Charlie Olawsky	Instructor
Public Service Division:	Gary Ebels	Division Chair
	Pat Rasch	Fashion Merchandising Instructor
	Patti Trepkowski	Child Development Instructor
Technology Division:	Granville Brown	Division Chair
	Ross Kladder	Apprenticeship Coordinator
	Frank Conner	Instructor
	Dick Foster	Instructor
Academic Support/Counseling:	Glenn Burgett	Counselor
Job Placement:	Jim Palmeri	Director
Social Science:	Richard Kurzhals	Instructor
	Gary Burbridge	Instructor
Secondary Vocational Education:	Cheri Parker	Vocational Technical Dir.-Wyoming Schools
	Linda Peters	VTE Program Developer-Grand Rapids Public Schools
School of Occupational Education:	*Till Peters	Dean of Occupational Education
Economic Development:	Don Boyer	Executive Director of Business and Technical Training
	CJ. Shroll	Chief Economic Development Officer
	*Paula Stark	Executive Director of Strategic Planning
Institutional Research:	*Juan Olivarez	Dean of Institutional Research
	*Mark Champion	Project Coordinator
Steering Committee Members:	*John Mackenzie	MSU-MCCTE, Project Monitor
	*Lorilee Sandmann	Director: MSU West Regional Exchange

* Denotes members of the scanning team also on the steering committee

EXAMPLE XIII: Scanning Team

ACTION:

Plan the Environmental Scanning Kick-off:

The steering committee plans the Kick-off orientation session for the purposes of teaching the participants more about environmental scanning and preparing them to scan and abstract information for the project. The session will contain information about the purpose and benefits of the scanning process. In addition, participants can be given an opportunity to practice abstracting articles while receiving feedback on their work.

Several things should be considered when planning such an orientation session. The ability to convey the purpose and benefits in this first meeting is vital to selling the concept of environmental scanning. The issue of who should sell the concept therefore needs to be considered. Someone at your institution who is a futurist or has done an environmental scan could be asked to collaborate on the orientation session. If all participants on the steering committee are relatively new to environmental scanning, then it might be advisable to seek an expert in the field outside of the institution for a portion of the presentation.

Another consideration is that of time. Most likely a majority of the people that you invite to the orientation will have never heard of environmental scanning or if they have they will probably not have a strong grasp of the necessary concepts. As mentioned before, the session should teach them about environmental scanning, provide them with a good reason to participate, and give them some practice reading and abstracting articles. You are bringing many busy people together for a block of time to introduce a new activity. Again, an outside consultant might be better able to provide a quick concise overview while members of the scanning team would be able to emphasize the benefits of environmental scanning and provide the practice of specific techniques.

The following worksheet is provided so that you can begin to plan your Kick-off Session. An agenda for the orientation session is provided in Example XIV, p. 76. A complete example of materials used during the first session is provided in Appendix 4. Use these resources as your steering committee plans this very important first session.

OUTCOMES:

- An agenda for the Kick-off session including what will be done, who will do it, and when it will take place.

Kick-Off Planning
Worksheet

1. When will the Kick-off Session take place?

2. What are the goals of the session?

3. What major topics do you want to cover during the session?

4. Who should be responsible for the coverage of these topics?

5. Are any outside presenters needed? If so, who and what will they present?

6. Who will take care of the details of arranging place and time for the session?

7. Who is responsible for keeping track of attendance and copying needed materials?

8. What items should be included in the evaluation of the Kick-off Session?

ENVIRONMENTAL SCANNING for OCCUPATIONAL EDUCATION
KICK-OFF EVENT
Friday, February 21, 1992

12 noon		Gather for lunch.
12:10-1:00		Welcome: Till Peters Lunch
I.	**FOCUS ON THE FUTURE**	
1-1:20	A.	Opening Remarks: Till Peters
	B.	Keynote: Grand Rapids Area in the Next 20 Years: Steve Nobel, Assistant Director, The Right Place Program
1:30-1:50	C.	Issues Management and Environmental Scanning: Lorilee Sandmann
	D.	A local perspective: Ray Hoag-Division Chair, Academic Computing-Video
II.	**OVERVIEW OF THE PROCESS AND PROJECT:** Mark Champion/Lorilee Sandmann	
1:50-2:15	A.	What is the Environmental Scanning Process?
	B.	Who will be involved?
	C.	What will we do?
		1. Scan 2. Analyze Data 3. Report/Recommend-Lorilee
	D.	When will we do Environmental Scanning?
III.	**SCANNING PRACTICE:** Lorilee/Mark	
2:15-3:15	A.	Abstracting information
	B.	Prioritization of emerging issues
IV.	**YOUR COMMITMENT:** Till	
3:15-3:30	A.	How we will make it work?

EXAMPLE XIV: Kick-Off Event Agenda

STEP IV: Implementation

Thus far we have laid the groundwork for the environmental scanning process. The first three steps are essential to the success of this process, but now the fun begins. In the Implementation Step all of the planning now comes to fruition as the process is introduced to a larger scanning group. Implementation is the step in which the scanning actually takes place and therefore is much longer. The actual length of the step will depend upon the focus of your scan and the time line you have set. The objectives for the Implementation Step are:

OBJECTIVES

Participants/Planners will:

- Provide orientation and practice for the scanning group
- Begin scanning and abstracting the information
- Collect and organize the information
- Monitor and troubleshoot the process
- Analyze the data
- Report the results
- Provide external input and validate the results
- Make recommendations

ACTION:

Provide Orientation and Practice:

The Kick-off Session for the purpose of orienting the scanners or perspective scanners to the environmental scanning process occurs when the steering committee feels reasonably certain that the mechanics of the process are in place and can be readily explained to the general group. This is not to say that there won't be adjustments! Environmental scanning is an art and a successful system relies heavily on feedback from the participants. This feedback provides a framework for the ongoing change that occurs in the process.

Preparation for the Kick-off was done in Step III. Because the concept of environmental scanning is fairly new, a smooth start-up becomes even more vital in encouraging willing participation of the group. Having all arrangements completed in advance and making sure all materials are well organized and ready for easy distribution will help to achieve a smooth Kick-off. The essential elements of the orientation such as establishing motivation, conveying the principles of scanning, and providing practice for scanning and abstracting, should remain evident throughout the planning and implementation of the Kick-off.

In addition to the above elements, one area to consider is the issue of follow-up. It is necessary to have people try out scanning and abstracting as soon as possible following the Kick-off. During the orientation, the project coordinator should encourage scanners to abstract an article shortly after the session and then follow-up with the participants to see how they are getting along. This issue of follow-up will be covered in greater detail during the section on Monitoring and Troubleshooting, but it is helpful to establish this pattern during the Kick-off Session.

Providing a method of reaching those people unable to attend the first session is helpful in recruiting scanners for the project. The project coordinator creates a

packet for use in orienting potential participants to the process using the materials provided at the Kick-off. This packet is shared with individuals and small groups who were not able to attend the session or others that become interested as the scan progresses. The Kick-off can also be recorded on video and made available to those unable to attend.

The materials used in the Kick-off at GRCC can be found in Appendix 4. You can use them as a model for developing your own orientation session. One item that you will not want to forget is the evaluation of the session. During your planning of the session in Step III, you were asked to develop evaluation questions. Now is the time to construct the questionnaire. Such an evaluation can provide the needed feedback for helping participants understand the process and also improve future sessions. The evaluation form used after the first session is provided in Example XV, p. 82.

OUTCOMES:

- A list of materials needed for the Kick-off Session.
- Required materials, refined and ready for use.
- A questionnaire based on the intended goals of the orientation for the purpose of evaluation.
- A strategy for follow-up on those attending and those unable to attend.

Kick-Off Checklist And Follow-Up Worksheet

1. What were the intended goals of the Kick-off Session? How do we know if these goals were met?

2. List the specific areas which might be improved next session.

3. What follow-up is needed for those that attended the session?

4. What follow-up is needed for those that could not attend the session but would like to be involved?

Environmental Scanning for Occupational Education
Kick-Off Session Evaluation

In order that we may improve the content and delivery of the Kick-Off Event we ask that you evaluate the following areas. With the use of the following scale, please rate the statements below.

1 - *Agree* **2** - *Somewhat Agree* **3** - *Neither Agree or Disagree* **4** - *Somewhat Disagree* **5** - *Disagree*

A. Topic Relevance

_____ 1. The presenters were knowledgeable about the topic.

_____ 2. The goals of the presentation were clearly evident.

_____ 3. The information given was current valuable and useful.

_____ 4. Examples and illustrations used help to clarify the topic.

B. Organization and Planning

_____ 5. It was evident that the presentation was organized and well prepared.

_____ 6. Material was presented in a systematic manner.

_____ 7. Handouts were of good quality and useful.

_____ 8. Audio-visual aids were of good quality and added to the overall presentation.

C. Group Interaction

_____ 9. My questions about the topic were readily answered.

_____10. The presenters encouraged adequate group interaction.

D. Physical Facilities and Logistics

_____11. The environment was conducive to learning.

_____12. Food and refreshments were satisfactory.

_____13. Break times were adequate.

_____14. The time allotted for the presentation was adequate.

E. Understanding

_____15. I feel comfortable with the process of scanning and abstracting information.

Comments:

Please place additional comments on the back of the form - THANK YOU.

EXAMPLE XV: Kick-Off Session Evaluation

ACTION:

Begin Scanning and Abstracting the Information:

The team begins scanning and submitting abstracts shortly after the orientation session. A good way to get things started is to ask participants to submit an abstract within a week of the Kick-off. The project coordinator monitors incoming abstracts to assure a quality and quantity sufficient enough to carry out a meaningful scan. The role of the coordinator at this point becomes coach, troubleshooter, and data organizer. These activities will be described in the next three sections.

It is also important at this stage for the steering committee to take steps to assure that they are getting the information they want. After several abstracts have been submitted by the scanning team, the steering committee should meet to discuss the abstracts and ascertain if any changes are needed in the form or the process itself.

During the early screening of the abstracts submitted, the GRCC steering committee discovered the need for a taxonomy to categorize and organize the information. As mentioned previously, this can be done during the initial development of the abstracting form. An example of the taxonomy used is provided in Example XVI, p. 86. Remember your taxonomy may be completely different, especially if the focus of your scan is different. The usefulness of a good taxonomy in the organization of information however, cannot be overstated.

Another addition made during the early stages of scanning and abstracting was the development of an abstracting key. The key helped scanners define what should be entered into the blanks on the form. A good time to create a key is following the use of the form during this initial round of scanning. You will start to see instances where the form can be misunderstood or misinterpreted. A key can help clarify your intent. The more detailed you can be the better. A good key can save hours of time in data input because it will minimize misinterpretation and lead to a uniform way of

submitting the abstracted information. An abstracting key for the abstract form shown in Example XI, p. 62 of Step III, can be found in Example XVII on p. 87. An abstracting key can be created during the construction of the abstract form and later revised during this initial scanning period.

OUTCOMES:

- A revised taxonomy for the purpose of organizing the data.
- An abstracting key which will assist scanning team members to complete the forms with minimal difficulty and submit quality abstracts needed for an effective scan.

Abstract Form Modification
Worksheet

1. What are the major difficulties arising in the abstracts submitted to date?

2. What modifications of the form could help to minimize these difficulties?

3. In general, are you getting the desired information from the current form? If no, what modifications could assist you in getting that information?

4. Is the revision of an existing taxonomy or the creation of one necessary at this point? If yes, what are some of the things that should be included?

5. Is the creation of an abstracting key for your form necessary at this point? If yes, what are some of the things that should be included?

Subject List

Select the most specific heading for the subject of your article. If the article does not pertain to any specific program, select the division to which it best relates. If it does not relate to a division, assign it to a general scan category.

Program Title	Division Name	Scan Categories
Accounting	Business	Sociocultural
Air Cond, Refridg, & Hting Tech	Computer Applications	Technological
Applied Telecommunications	Health	Economics
Architectural Drafting Tech	Hospitality Management	Environmental
Associate Degree Nursing	Public Service	Political-Legal
Automated Manufacturing Tech	Technology	Education
Automotive Technology		Demographics
Business Administration		
Child Development		
Computer Applications Tech		
Computer Electronics		
Corrections		
Culinary Arts		
Data Processing		
Dental Assisting		
Dental Hygiene		
Electronics Technology		
Executive Secretarial Studies		
Fashion Merchandizing		
Food and Beverage Management		
Industrial Tech and Tooling		
Interiors and Furnishings		
Law Enforcement		
Legal Secretarial Studies		
Machine Tool		
Management and Supervision		
Marketing		
Mechanical Drafting Tech		
Medical Secretarial Studies		
Occupational Therapy Assisting		
Plastics Manufacturing Tech		
Practical Nursing		
Quality Science		
Radiologic Technology		
Secretarial Studies		
Welding Technology		
Word and Information Processing		
Youth Services		

EXAMPLE XVI: Taxonomy for Abstract Form

GRAND RAPIDS COMMUNITY COLLEGE
ABSTRACT FORM KEY

1. **Subject**
   Use the list on the reverse of the abstracting form to select the heading that best relates to the source.

2. **Source**
   Check the most appropriate category which denotes where the information was derived. If "other" is used, try to briefly describe the source.

3. **Title**
   Print media - title of the article
   Conference - title of the conference session
   TV/Radio Program - Name of program and title of the specific show.

4. **Author/Speaker/Reporter**
   Journal/magazine/newspaper - name of the author/reporter
   TV/Radio - name of the major speaker.
   Networking contact/speaker - name of the person.

5. **Title/Role/Position**
   Describe the position held by the speaker or networking contact.
   Leave blank for information from print media.

6. **Publication/Conf./Business**
   Print media - title of the journal/magazine/newspaper
   Conference - conference title.
   Networking Contact - person's place of employment

7. **Date/Pages/Volume/No.**
   Print media - fill in the blanks
   TV/Radio/Conferences/Networking Contacts - insert the date

8. **Local/Regional/State/National/International**
   Check one that best describes the source
   Local means Kent and Ottawa counties
   Regional means western lower Michigan

9. **Scanner's Name/Date**
   Record your name and the date you submit the form.

10. **Summary**
    Summarize the major points. Who, What, When, and Where?

11. **Major Issue**
    An issue is a specific future development which is likely to require some response from the organization. Often an issue has a defined constituency, such as parents concern for day care as more two parent families enter the work force. The issue may represent either a potential opportunity of threat for occupational education. Describe the information in terms of the issue it presents.

12. **Major Implications**
    Record some of the major implications for occupational education. How might the issue affect the School of Occupational Education, a specific division or program?

EXAMPLE XVII: Abstract Form Key

ACTION:

Collect and Organize the Information:

Data organization is one of the most time consuming tasks, but it can be made somewhat easier through the use of a computerized data base. The software chosen is determined by the capabilities you desire in the organization of the information. An initial analysis of the incoming abstracts can also give insight into the capabilities needed in a data base software program. It is helpful to have software sophisticated enough to allow you to search the stored abstracts for needed information. The following box highlights some of the ways that the abstracts can be organized and searched in a data base:

Data searched and reported by:

Subject
Media Source
Geographic Source
Date Submitted
Scanner's Name
Summary-Issue-Implication
Issue
Key Word in Summary, Issue, or Implication

The ability to search the data base easily and extensively is important and will ultimately save time. First the ability to quickly search the data makes the abstracts easier to organize and retrieve. Next, it saves time when monitoring the incoming abstracts for geographic source and subject matter. Finally, the ability to report out full text regarding specific issues or implications recorded in the abstracts, greatly facilitates reporting the information back to the scanners. This reporting capability is very important when compiling the data for an upcoming analysis session. Example XVIII on p. 92 illustrates a report with some of the major categories included. This

report can then be distributed to the scanners and other interested stakeholders in an effort to report progress and share information.

Another issue concerning abstract collection is that of data input. The input of data is a very time consuming proposition. For example, twenty scanners who consistently abstract one to three sources of information per week, can yield twenty to sixty abstracts per week. This is a very successful scan when only incoming abstracts are considered, but if the system is unable to handle that many abstracts or you can't get them into the data base, the whole process breaks down.

The ideal data base will have the ability to store a large number of abstracts and possess the ability to accept large chunks of text. The ability of a data base to handle a large number of abstracts, will alleviate the problem of overloading the system and is probably the most important. If the software chosen cannot accept longer passages of text, a logical solution is to store less information about the abstract. For example, the demographic information about the article or information source can be put into a simple data base. Even a short statement such as a one line summary or issue statement can also be stored. Storing such statements will allow quick retrieval of the information. The use of a simpler data base can cause problems. If you store less information, you will more than likely need to return to the original form submitted for a more detailed look.

If a data base of proper size and suitable features for handling the abstracts has been selected, the problem of inputting that information still remains. One approach and probably the ideal one is to have the scanner directly input the abstract into the data base. The use of a Fox Pro data base application on a local network, enables the scanner to access the abstracting form on a computer. Although this is a great solution and is technologically possible, it of course, requires the necessary software and hardware to make it work. Unfortunately such technology is not available at every institution.

The GRCC scan had the technology available to input abstracts directly, but still experienced several problems. People were unfamiliar with Fox Pro and therefore were reluctant to try it. Not all scanners had access to the network computer and even if they did it was difficult to convince them that it would be easier to input the abstract directly. Many preferred to use their computer at home or use the highlighting method.

For these reasons, most of the abstracts were entered from the submitted hard copy by the program coordinator. If the information coming back on the form is uniform, easy to read, and concise, it is suggested that clerical help in the form of a secretary or student worker be enlisted. Clerical assistance is almost a must if the project coordinator is only able to spend twenty hours or less per week on the scanning process.

Once a data base software program is selected and set up, the job of data collection and organization should run smoothly. The more that you can use technology to do the work, the more efficient your system will be. Automating data entry is a big stumbling block to the collection and organization of data, however, a network accessible to all the scanners can make data entry easier. As the technology of full text scanners improves, data entry may become more efficient. Until that time, you must do the best you can to make data entry easier and less time consuming.

OUTCOMES:

- A data base software program selected and set up to handle incoming abstracts.
- A person or persons designated to input the abstracts into the data base.

Data Base Set-Up And Data Entry
Worksheet

1. What data base software program(s) is/are available at your institution?

2. Is the data base software program sophisticated enough to handle the information generated from the abstract forms? (Does it have sufficient capacity? Does it have adequate search and reporting capabilities?)

3. If your software is not adequate what software may be able to be purchased to handle the scanning effort?

4. Once you have picked the data base software that you will use, set up the file according to the data that will be obtained from the hard copy abstract form. Is there any other information that will be useful in organizing the data?

5. What person or persons will enter the abstracts into the system?

Environmental Scanning for Occupational Education
Sample Data Base Report

Title: Teaching with Technology

Source: Chronicle of Higher Education

Geography: National

Issue: Opportunity: Simulated situations using interactive video. A better way to learn!

Summary: Nursing students at Del Mar College, Corpus Christi TX, are using interactive video to learn to react properly to simulated emergency situation without endangering patients. In may cases, students go through the entire care process with the patient on the video screen. - Clipping on file.

Implication: We need to purchase hardware and software to enable us to use this learning technology - first in Nursing and then in other areas.

Title: Smiths to Cut 160 Workers by Early Spring

Source: Grand Rapids Press

Geography: Local

Issue: Companies dealing with national defense contracts continue to lose business. This is a company that employs electronics technicians and electrical engineers.

Summary: Smith Industry in GR is planning to cut 160 salaried employees in April. This cut is being made because of the cuts in the national defense budget. The company is looking at a pretty hot future in its fiber optic gyro, an new navigational tool that generated Smiths a $13MM dollar contract last year.

Implication: The potential for jobs this spring for Electronics Technology students is declining. The need to teach electronics students skills in fiber optics, since there may be some future in it at Smith Ind. If our students are to be prepared for this they need to learn more about them.

EXAMPLE XVIII: Sample Data Base Report

ACTION:

Monitor and Troubleshoot the Process:

Once the actual process of scanning and abstracting begins it is a good idea to designate a monitor. The logical choice for this role is the project coordinator. As abstracts are submitted, the coordinator checks them for quality and then assists any scanner who is having difficulty. Recurring difficulties may necessitate a change in the abstract form or clarification of the actual process.

A systematic response to the comments and suggestions of scanning team members is an integral part of a successful scanning process. A deliberate responsiveness to a scanner's ideas helps the participant to feel a sense of ownership and can provide a better fit with his or her individual work style. The role of the project coordinator as troubleshooter in conjunction with the guidance of the steering committee is an effective way to respond to suggestions and modify the process continually. A couple of examples follow.

Immediately following the Kick-off Session feedback from the participants was used as a catalyst for a revision of the abstracting form. In addition, a checklist-style key to assist the scanner in filling out the form completely was created. The key has previously been shown in Example XVII on p. 84. The quick response in making the form easier to use was appreciated by the scanning team and tended to establish their ownership in the process.

Another aspect of the monitoring and feedback system was a frequent demographic check on the subject matter and geographic origin of the abstracts. In order to meet the goals of an environmental scan it is important to monitor these areas in terms of the scan's focus. Example XIX on p. 97 contains a report reflecting the demographic information which can be shared with the scanners and other interested persons.

For example, as a project coordinator begins to analyze the report in Example XIX for the geographic origin of the abstracts submitted, it becomes apparent that the regional/local focus of the scan is not being reflected. As mentioned in a previous section, abstracts should come from all geographic areas, but the major emphasis should be on local and regional data. By monitoring the geographic origin of the abstracts, the coordinator can assess whether the appropriate data is being obtained.

The problem of unsatisfactory geographic distribution can be solved in several ways. A call to an individual scanner may be in order, but if it appears to be a generalized problem experienced by many, a different strategy may be applied. In such a case, it is helpful to call upon the steering committee to address the situation. With input from this larger group, strategies can be formulated to correct the situation. The project coordinator then implements the strategy formed by the steering committee and monitors the results. For example, need for local and regional abstracts can be resolved by assigning specific local events or publications to individual scanners. By checking the incoming abstracts over the next few weeks, the project coordinator is able to monitor them for the desired change.

Providing motivation is another key component of the project coordinator's job. Frequent communication with the scanning team, either formally through notes and memos or informally through personal contact, helps to keep the project in front of them and makes it easier to spot problem areas. Example XIX on p. 97 shows a simple form which can be used as an indication to the scanner that his or her abstracts have been received. The project coordinator simply fills in name of the scanner, the number of abstracts received, and possibly a short note. If there are long periods of scanning before an analysis session the use of such a form prevents participants from feeling as if they are scanning into a vacuum. Communication with the scanning team will be covered more thoroughly in the section, Report the Results on p. 105.

The time frame of GRCC's scan was such that it carried through the summer months when faculty and staff were either on vacation or, at best, at the college infrequently. The steering committee was concerned about maintaining the submission of abstracts through the summer months. The project coordinator was asked to encourage scanners to submit abstracts over the summer months. It was suggested by the steering committee that this encouragement be light and informal. Example XX, p. 98, is an example of how humor might be infused to motivate the scanning participants.

OUTCOMES:

- A plan for monitoring and troubleshooting the process of environmental scanning.
- The development of materials which would aid in monitoring the scan.

Monitoring and Troubleshooting
Worksheet

1. How many abstracts per week are you receiving?

2. Are there certain scanners which have been slow to participate?

3. Have you contacted those scanners who are not participating in the scanning and abstracting of information?

4. What is the geographic spread of the abstracts being received?

   Local:
   Regional:
   State:
   National:
   International:

5. Is it necessary to form a strategy to change the geographic make-up of the abstracts? If so what could be done?

6. What is the subject spread of the abstracts being received? Are there any taxonomy areas in which you are receiving no abstracts?

   Sociocultural:
   Technological:
   Economic:
   Environmental:
   Political/Legal:
   Education:
   Demographic:

7. Is the communication network between the project coordinator and the scanning team working well?

THANK YOU NOTE SENT TO SCANNERS

THANK YOU!

Your ____ abstract(s) has/have been received.

Keep up the good work.

Environmental Scanning for Occupational Education

Abstract Receipt Report
April 27 through June 23, 1992

GEOGRAPHIC DISTRIBUTION

Local -	8
Regional -	6
State -	10
National -	25
International -	1

SUBJECTS

Computer Applications	12
Economics	6
Education	6
Legal Political	3
Workforce	2
Health	3
Child Development	3
Industrial Tech and Tool	2
Demographics	3
Technological Adv.	5
Management and Supervision	1
Sociocultural	4

RECATEGORIZED BY STEEPED

Sociocultural	13
Technological	19
Economics	6
Environmental	0
Political/Legal	3
Education	6
Demographics	3

Total 50 Abstracts received from 9 Scanners.

EXAMPLE XIX: Abstract Thank You/Abstract Receipt Report

INTRODUCING: SUMMER SCANNING!!!

SCANNING TIP #1:

Abstracts and leisure can mix.

We need to receive your abstracts this summer. Especially those from local and regional articles.

SCANNING TIP #2:

Summer scanning requires less equipment and is more inexpensive than any other summer activity.

Equipment suggested

The stack: "I've been meaning to get to."

A highlighter

(*Using various colors over the summer can add excitement to the experience.*)

A pen or pencil

A healthy supply of abstracting forms

Place all of the above in a tote bag and you have a handy dandy scanning kit, ready to go when you are!

SCANNING TIP #3:

Getting a handle on the future does not have to be done in the confines of an office.

Suggested locations:

In a hammock under the shade tree. (A refreshment of choice is optional.)
In a lounge chair on the beach. (A sun screen accessory is suggested.)
In the boat while waiting for the "big one" to bite.
On the back porch as you survey the day's work on the lawn or garden.
In the glow of the Coleman lantern at your favorite campsite. (Post-scan "S'mores" are a must)

Caution: Do not scan while:

** **Water skiing** ** **Playing volleyball** ** **White water rafting** **

SCANNING TIP #4:

Submitting abstracts can be fun and easy.

Plan a day trip to GR.

After you have toured the city, drop off your forms in Mark's mailbox at historic GRCC

Send your abstracts to: Mark Champion
MSU West Regional Exchange
Commerce Building
5 Lyon Street, NW, Suite 750
Grand Rapids, MI 49503-3123

Note: Attach a post card if you are anywhere more exciting than the above address. (Thanks!)
If you will constantly be on the move-going places that most of us only dream of, there is a limited supply of pre-addressed/postage-paid envelopes. Call Mark at 458-6805.

Have a wonderful summer and don't forget the 4 S's:

SUNNING SAILING **SWIMMING & SCANNING**

EXAMPLE XX: Summer Scanning Flier

ACTION:

Analyze the Data:

Scanning and abstracting continues for a period of time sufficient enough to gather the number of abstracts necessary for a meaningful analysis. This number will vary depending upon whether all subjects and geographic areas have been covered, the number of scanners participating, and the analysis technique chosen. Before deciding on what type of analysis is needed, it is recommended that you review again the matrices in Appendix 2. The data you have been receiving may warrant an analysis technique different from the one chosen during the planning stages of your scan. Use the sample planning sheet shown in Example XXI on p. 104 and the worksheet in this section to plan your own analysis sessions.

GRCC's project ran its first analysis session approximately two months after scanning had begun. Prior to the session, each scanner received a report containing the critical information contained in the submitted abstracts. After a sufficient amount of time was given to review the abstracts, the entire group of scanners met to organize and prioritize the issues arising from the abstracts. The Concept Mapping software program was used to perform this task, although a wide variety of analysis techniques exist which could have been used. A brief description of the Concept Mapping program and its application in environmental scanning can be found in Appendix 5.

Once the concept map was produced, the project coordinator and the steering committee were involved in the interpretation and subsequent reporting of the results. Although the Concept Mapping software was relatively easy to use, the interpretation of the map produced took considerable time to learn.

Scanning continues after the first analysis session. This first session is an excellent opportunity to answer questions and address problems with the process. It

is also a good time to mention subject areas or geographic areas which are not being covered by the scan. Adequate discussion time and a session evaluation are strongly recommended.

A second or third analysis session is held depending upon the number of abstracts being submitted and the time line of the process. It is important to keep the number of meetings for scanners at a minimum. A minimum number of meeting improves attendance at necessary meetings and helps the participants feel that the project will not consume too much of their time. We held three analysis sessions with all of the scanners over the course of the scan. Our analysis sessions were well attended and sparked excellent dialogue between scanning team members. The shared perspectives of such a diverse group resulting from this dialogue is well worth the time spent. Involvement in the analysis session also serves to develop ownership in the project among the participants.

When planning another analysis session, again use the matrix in Appendix 2 to determine what technique you will use. You may decide to use the same technique or attempt a new one. Concept mapping was used for our next analysis session and involved only the steering committee plus a few volunteers from the scanning team. Using this smaller group worked well because the session fell during the summer when it was difficult to get the entire group of scanners together.

A third analysis session was held to combine and prioritize the issues emerging from the first two analysis sessions. A multivoting technique was used for this session. A compilation of the analysis session materials and the results can be found in Appendix 6. Reports created after the interpretation of each of the concept maps are found in Appendix 8.

OUTCOMES:

- Each analysis session will require some degree of planning.
  - A list of techniques and materials to be used for each session.
  - Time to learn new techniques if they are unfamiliar to the steering committee/project coordinator.
  - Dates for all analysis sessions set with notification given to all participants in the project.

Analysis Session Planning
Worksheet

1. How many analysis sessions will be held?

2. What techniques will be used?

3. Will any of the techniques require a learning period? If so, who will be responsible for learning the technique?

4. Who will make arrangements for the facilities?

5. Use the space below to create an agenda for each session?

   Session 1:
   Analysis Technique(s):

   Will it be necessary to learn the technique? Who will be responsible?

   What speakers/materials will be needed and who is responsible?

Speaker/Material	**Responsibility**

   What is the date and time for the session? Where is it taking place?

   What materials need to go to the participants prior to the session?

Analysis Session Planning (Continued)

<u>Session 2</u>:
Analysis Technique(s):

Will it be necessary to learn the technique? Who will be responsible?

What speakers/materials will be needed and who is responsible?
Speaker/Material **Responsibility**

What is the date and time for the session? Where is it taking place?

What materials need to go to the participants prior to the session?

<u>Session 3</u>:
Analysis Technique(s):

Will it be necessary to learn the technique? Who will be responsible?

What speakers/materials will be needed and who is responsible?
Speaker/Material **Responsibility**

What is the date and time for the session? Where is it taking place?

What materials need to go to the participants prior to the session?

Session 1: **PLANNING SHEET**

Analysis Technique(s):

Small group discussion
Concept Mapping

Will it be necessary to learn the technique? Who will be responsible?

Concept Systems Software - Project Coordinator

What speakers/materials will be needed and who is responsible?

Speaker/Material	**Responsibility**
Winds of Change Video	John Mackenzie
Scanning Update	Project Coordinator
Issues Clarification	Lorilee Sandmann
Title/Issue Report(30)	
Key Questions for Analysis(30)	
Concept Mapping Transparencies	Project Coordinator
Sorting and Rating the Issues	Project Coordinator
Issue Cards(30 sets)	
Sorting Data Sheet(30)	
Rating Scale(30)	
Rating Sheet(30)	

What is the date and time for the session? Where is it taking place?

April 24, 1992, 12 noon to 3 p.m.
Multipurpose Room B GRCC Student Center
Special Arrangements: Lunch and Refreshments

What materials need to go to the participants prior to the session?

Article on Concept Mapping(40)	Project Coordinator
Abstract Report: Title/Summary/Issue(40)	Project Coordinator

EXAMPLE XXI: Analysis Session Planning Sheet

ACTION:

Report the Results:

Keeping the participants and other stakeholders informed, involved, and excited about a scan is an ongoing process. Frequent communication via normal channels in an institution is imperative. Reporting the progress of the scan is just as important as reporting the results of a major analysis session.

To achieve day-to-day communications with the scanners it is advantageous to use whatever system has been set up at your institution. Common options are interdepartmental mail, voice mail, and computer E-mail systems. It is helpful if you can set up a group mailbox for voice mail or E-mail. Group mail will make it possible to send one message to all scanners at the same time. If this is possible, a tremendous amount of time is saved and a good link with the scanners can be maintained.

If a more elaborate reporting system is desired, an institution might consider a periodic publication such as a newsletter or formalized report. The newsletter can keep participants informed of the progress of the scan, highlight important trends, and report the results of the analysis sessions. Newsletters are also a good technique of keeping key leaders outside of the scanning project informed. An internal and external mailing list can be constructed and continually updated as more people become interested in the project. The list should include those directly involved in the project, key college administrators and staff, and other interested community and business leaders in the institution's service area. A cover letter to explain the scan and solicit the involvement of those outside of the project can be very useful in stimulating external support.

For the GRCC scan, the newsletter, ***SCANOTES***, was created and sent to the scanning team, college administrators, area legislators, community and business

leaders, and the occupational deans at the other 28 community colleges. ***SCANOTES*** was published approximately every two months for the purposes of reporting ongoing project information.

A separate newsletter, ***TITLE WAVES***, was created to highlight the titles of local and regional articles pertaining to occupational education which appeared in the *Grand Rapids Press*. ***TITLE WAVES*** was published as a way of tracking local events and information which could potentially impact jobs and job skills in the college's service area. A column entitled *Ripples* was included in ***SCANOTES*** as a mechanism for highlighting trends emerging from the information reported in ***TITLE WAVES***. Title analysis is a quick and easy way to begin to monitor area news. The articles can be referenced in the title report allowing interested parties to track down a specific article for further research. A partial example of ***TITLE WAVES*** is shown in Example XXII, p. 108. For a complete example of both ***SCANOTES*** and ***TITLE WAVES*** refer to Appendix 7.

Although the newsletter method of reporting is very effective, the resources for putting the publication together need to be available. Resources such as someone to create the content, design the mast head, and format the newsletter are essential to the success of the publication. The process is also fairly time consuming and can be even more so without the proper resources. An alternative to the newsletter is periodic reporting previously shown in Example XVIII on p. 92 or Example XIX on p. 97. An excerpt from the second analysis session report is shown in Example XXIII, p. 109, with the complete report appearing in Appendix 8.

OUTCOMES:

- An internal and external distribution list.
- An established method of regular communication.
- A method for reporting the progress and the results of the scan.

Establishing A Communications Network
Worksheet

1. What types of regular communications systems exist at your institution?

2. Can any of them be used for providing information to scanners? How would it be done most effectively?

3. What mechanism will be used report progress and major results?

4. Who will be responsible for the reports?

5. Does the institution have any resources that would facilitate the publication of a newsletter?

6. Who at the institution, apart from those directly involved in scanning, should be placed on the distribution list for a report of progress and results?

7. Who outside of the institution, apart from those directly involved in scanning, should be placed on the distribution list for a report of progress and results?

TITLE WAVES

Category:	**Economics-Continued**
01/30/92	Office furniture sector to lose steam in '90s?-Upjohn forecast conflicts with U-M studies predictions
02/02/92	Downtown Steketee's Manager tempers change with constancy-Keith Lang
02/02/92	Diesel Technology likes to rev up and show off its speed-Has contract w/ Mercedes-Benz-Derek Kaufman
02/16/92	Gerber buys interest in Polish firm-Fremont
02/16/92	Zondervan Publishing laying off 49-132 from GR plant
02/17/92	Company offers cash to employees who buy American-Prince Corp./Holland
02/17/92	Local factories see drop in orders
02/18/92	New bank specializes in personal service-Ada Township
02/20/92	Canadian firm plans to build office tower on the Grand River
02/20/92	Job fair offers hint of future for students-Tough competition for jobs
03/02/92	Stores, tax rolls brace for loss of AlloyTek-Grandville
03/06/92	Local AT&T operators are 'lost and scared'-Advent of robotics equipment, E Paris office will close
03/06/92	Gentex lands contracts totaling $8.3 million, Includes foreign and domestic contracts-Zeeland
03/06/92	Area real estate market showing signs of recovery
03/08/92	Area leaders fear trade bill will cut local exports to Japan
03/08/92	Joint ventures gaining favor as a way to go-Both domestic and foreign
03/08/92	Home sales increase 15 per cent in February
03/08/92	Local AT&T offices are scheduled to close-105 employees will lose jobs next year
03/08/92	Cascade Engineering enters venture with Hungarian firm
03/08/92	Steelcase Inc. announces new quik shipment program-22 product lines shipped w/in 48 hours
03/13/92	Small business man of year again is from Holland-Boyd Berends/ProLight
03/14/92	Area economy showing signs of being 'on mend'
03/15/92	Paragon expands with branch in Grand Haven-Bank with personal service "niche"
03/15/92	Costly vision for downtown-GRP criticizes cost of Voices and Visions-Editorial
03/15/92	Global Conveyor-Rapistan, as part of a German conglomerate, has a broader role
03/16/92	Stressing quality key to success for Concept Industries Inc. (plastics)-Shawn Eshragh
03/17/92	GR job Growth was 16th best-1991 4th quarter
03/19/92	New Jersey firm is buying Hexcel, Chemical Products Division-Zeeland
03/19/92	Herman Miller suffering from declining sales, competition

EXAMPLE XXII: Title Waves Excerpt

Environmental Scanning for Occupational Education
A joint project of
Grand Rapids Community College and Michigan State University

RESULTS OF THE FIRST CONCEPT MAP

Methods: The concept map was developed by using a computer program from Concept Systems. A brief explanation of the process and the map generated can be found on the next page of this report. For a more detailed explanation of the process see ***SCANOTES*** **Vol. 1, No. 2.**

After the map was developed this report was constructed using the following process. First, by discerning the major theme a title was given to each cluster. Next, the major issue or issues were extracted from each cluster and were identified with a short phrase. Each issue phrase was then formed into a statement indicating the direction of the trend. Finally, the committee attempted to identify some measurable indicators for each trend. Some indicators are expressed so that each trend may be monitored through objective data to determine whether it is on the increase, decrease, or remains unchanged. Other indicators can be monitored according to the types of activities occurring in the external environment (i.e. technologies introduced, newly created jobs or job skills, etc.) The clusters are listed in order of their likelihood of impact on occupational education as rated by the participants of the first analysis session. (Clusters 15 and 20 have identical ratings.)

Applications: The data below will be compared and combined with the results of the last concept map. The entire group of scanners will review the issues contained in both concept maps at the next analysis session on **September 29, 1992**. At this session scanners will select the issues most likely to impact the School of Occupational Education at GRCC. Immediately following the analysis session a delphi questionnaire will be constructed and sent to community leaders and outside faculty experts. The purpose of the delphi will be to provide external validation for the issues identified by the scan and to begin to translate those issues into the jobs and job skills which will be needed in the future. The results of the delphi will be discussed at the final analysis session on **November 20, 1992**. At that time, recommendations for action will be drafted for submission to the Dean of Occupational Education.

Endnote: This map appears to be more defined than the first attempt. This is probably due to an improved experience level, both of the scanners providing the information and the steering committee analyzing the concept map. The learning experience has been a good one and the technique of concept mapping as a tool to sort and rate issues has drawn us closer to discovering what issues may impact School of Occupational Education at GRCC in the future.

EXAMPLE XXIII: Concept Map Results Excerpt

ACTION:

Provide External Input and Validate the Results-A Delphi Survey:

The use of community and business leaders as well as outside faculty experts can be helpful in validating the information collected during an environmental scan. The question concerning whether you have scanned the "right" thing is probably the most frequently asked question. By sharing results with external leaders you can see if your conclusions match theirs. Also, their ideas and perceptions can be collected and added to the results of the scan. In a sense this is another analysis technique which has the side benefit of validating or disputing your findings.

After the scanning data has been analyzed and prioritized, a method of eliciting external feed back is chosen. A wide variety of methods are available. (Refer to the Analysis Matrix in Appendix 2.) Many of the analysis techniques can be used to validate your results simply by involving key community, business, and outside educational leaders. Validation can be achieved by bringing together such an external group for a round table discussion centered on the results of the scan. The results can also be placed in a survey format. The survey is then sent to several external sources to gain "real world" insight into the issues that have been uncovered by the scan. A process such as a simple survey or the more elaborate Delphi technique will not only help to validate the information, but in some cases can add to the data pool by bringing new and fresh perspectives.

GRCC's project used a two-round Delphi survey. This survey method elicits responses from a group of "experts" who respond to a series of statements or questions and then record their rationale for making certain responses. The results of the first round are compiled with the comments included and returned to the Delphi panel for a second round of responses. After seeing the results of the first round, some opinions tend to change and hopefully lead the group to a form of anonymous

consensus. Although only two rounds were used in our case, a Delphi can have multiple rounds.

A unique feature of our Delphi survey was the use of a FAX machine to send the questionnaires and receive the responses. This technique tended to make responding easier and greatly cut down on the time needed to complete the survey when compared with the use of the mail method. The survey was sent to twenty people with an eighty-five percent return rate and was conducted in less than three weeks. A compilation of materials and reports resulting from the Delphi survey is found in Appendix 9. Example XXIV on p. 113 shows how the Delphi panel prioritized the top fifteen issues which emerged as a result of the scan as compared with the scanning team's rankings.

OUTCOMES:

- A list of key leaders from the business and educational communities.
- A method of providing external analysis and validation.

External Validation Methods
Worksheet

1. What key leaders might take part in such a validation process?

   Business and Industry:

   Organized Labor:

   Civic Leaders:

   Education:

2. What methods of validation and further analysis will be used?

3. Do these techniques need to be learned? Who will be responsible for the learning and implementation of the technique?

4. How will the results of the external validation be distributed? Who will be responsible?

	ISSUE	GRCC SCANNERS	DELPHI RESPONDENTS ROUND 2	GAP (ABSOLUTE VALUE)
1	Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.	5	6	1
2	Multimedia technology will have an impact on overall instruction in the community college.	11	13	2
3	Students with disabilities will be a larger share of the student population, significantly impacting education and other systems in light of their protection under the ADA (Americans with Disabilities Act).	14	14	0
4	U.S. policy and programs will be ever increasingly affected by global markets.	10	2	8
5	Changes in the workplace (layoffs, technological replacement of workers, downsizing of large manufacturers) are requiring technology and other training and retraining.	1	1	0
6a	Courses that teach emerging technologies will be increasingly demanded by business and industry.	6	10	4
6b	Computers and other technological innovations must play a major role in educational reform.	6	7	1
7	As reforms take place in the K-12 education, students coming to the community college will have different needs.	13	14	1
8	Health care costs and the public's need for health education will be important to the greater Grand Rapids economy.	16	12	4
9	Increased minority and female participation in the workforce will demand issues of child care, pay equity and non traditional job opportunities to be seriously addressed.	4	8	4
10	Demands by the public to ensure basic academic skills and problem solving abilities among students leaving higher education programs will increase.	2	4	2
11	Community colleges must anticipate future.	15	9	6
12	The increased level of interest of employers and government in the quality and level of training of the workforce will require a like interest among community colleges.	8	4	4
13	GRCC School of Occupational Education could enhance the economic recovery of the Grand Rapids metropolitan area in terms of job creation and retention.	3	16	13
14	Emerging job markets in the health industry will require community colleges to modify existing programs and create new ones.	12	11	1
15	Emphasis on quality participatory management, customer satisfaction, and education are key to successful businesses.	9	3	6

EXAMPLE XXIV: Delphi Results Comparison

ACTION:

Make Recommendations:

After the data has been analyzed and validated it is useful to bring the scanning team together once again to discuss the results. Although final recommendations can be drafted by the project coordinator or the steering committee, involving the scanning team reinforces that sense of ownership in the process and provides valuable perspectives. The scanning team's involvement is an important step in drafting the recommendations that will be sent to the Dean of Occupational Education.

Once the results have been discussed, the scanning team is asked to draft recommendations for action. The possibility that the information gathered in the scan might not being used, was a frequently voiced concern of many of the participants during our pilot. The scanning team's involvement in the development of the recommendations helped to reinforce the usefulness of the scan's results.

The steering committee produces a final draft of the recommendations, shares the draft with the scanning team, and then forwards them to the Dean of Occupational Education. At this point the recommendations are ready for integration into the occupational education planning process.

The agenda used for the review of the Delphi survey results and recommendation writing session is shown in Example XXV on p. 117. During that session, participants were asked to work in groups. Each group was given three issues for which they were to draft recommendations. The results of each groups' work were reported back to the total group at the end of the session. Participants placed their draft recommendations on poster paper and shared them with the rest of the group. Example XXVI, p. 118, represents the initial recommendation on the global market as reported by that work group. A complete compilation of the materials used for this session are found

in Appendix 10. The recommendations written as a result of the scanning process and this last session are found in Appendix 11.

OUTCOMES:

- A plan for discussing and creating the recommendations for the Dean of Occupational Education.
- Recommendations for the School of Occupational Education.

Recommendation Writing
Worksheet

1. What method for writing the recommendations will be used?

2. Who will be involved?

3. Who will be responsible for planning?

4. Who will review the draft document?

5. Who besides the Dean of Occupational Education should receive the recommendations?

ENVIRONMENTAL SCANNING WORKSHOP
NOVEMBER 20, 1992

RECOMMENDATION WRITING SESSION
AGENDA

12:00 p.m.	Buffet Lunch
12:30 p.m.	Opening Remarks
	Presentation of Delphi Results
	Group Discussion
1:00 p.m.	Break Into Small Groups
	Write Recommendations
2:15 p.m.	Report on Recommendations to the Full Group
2:45 p.m.	Where Do We Go From Here?
3:00 p.m.	Adjourn

EXAMPLE XXV: Recommendation Writing Agenda

ISSUE 4.

U.S. policy and programs will be increasingly affected by global markets.

I. GRCC should:

a. Broaden our focus from that of the G.R. region to a national/international focus. Compare our products (students) to a world class standard.

b. Our students must be knowledgeable about U.S./World economic and political policies.

c. GRCC must promote awareness of cultural diversity.

II. How...

a. Study content of current curriculum to include global context.

b. Offer cultural diversity training/awareness to GRCC staff and students.

III. When...

a. ASAP

EXAMPLE XXVI: Draft Recommendation

STEP V: Integration

Once implementation has occurred and those involved have gone through one cycle of scanning, it is time to step back and evaluate the process. In this way the value added to the occupational education planning process can be properly assessed. Due to the nature of Integration, it may actually begin during the Implementation Step. As the project develops and you begin to take note of its benefits, integration should occur naturally, as the scanning cycle progresses. The Integration Step includes the following essential objectives:

OBJECTIVES

Participants/Planners will:

- Evaluate and refine the process
- Institutionalize the process
- Start a new cycle

ACTION:

Evaluate and Refine the Process:

Evaluation of the scanning process occurs on two levels. Formative evaluation after major events such as the orientation and analysis sessions can help to modify the process as it proceeds. The information gleaned from formative evaluation is also valuable at the end of a cycle because it can be used to improve the quality and mechanics of the next cycle. If a good monitoring and feedback system has been developed, examining the situations that developed and how they were handled can be valuable. Both formal and informal evaluation sources of information should be examined shortly after a cycle has been completed. Example XV on p. 82 shows the questionnaire used to assess the Kick-off. Other examples of formative evaluation tools

can be found in Appendix 6. The information is used to refine the process and alleviate certain pitfalls experienced during the previous cycle.

At the end of the scanning cycle a summative evaluation is done to assist in the refinement of the process. A survey such as the one in Example XXVII, pp. 124-127, was used in the GRCC scan. A report of the results of this evaluation can be found in Appendix 12. Use the questionnaire as a model to construct your own summative evaluation. Also, interviewing key participants can be helpful. Evaluation and feedback are essential elements in shaping the system to fit the individual needs of each institution.

OUTCOMES:

- A planned evaluation strategy including a questionnaire for the evaluation of the scanning process and other useful data.
- A plan for integrating changes into the scanning process.

Evaluation And Refinement
Worksheet

1. What strengths are indicated by the formative evaluations? Can these strengths be built upon?

2. What weaknesses do these evaluations bring to the surface? How can they be addressed?

3. What situations occurred during the monitoring and feedback of the process which may need to be addressed in the refinement process?

4. What major categories need to be evaluated at the end of the process?

5. What are the questions that should be addressed under each category?

6. Should an interview of the key participants and/or users of the information be conducted?

7. Who should be interviewed?

Evaluation and Refinement (Continued)

8. What is the primary focus of the interviews. What questions will be asked?

9. Based on the evaluation data what are the strengths of your environmental scanning process?

10. Based on the evaluation data what are the weaknesses of your environmental scanning process?

11. Will you continue the process?

12. What is your plan for change?

Environmental Scanning for Occupational Education
Summative Evaluation of the Scanning Process

Directions: We have completed an entire cycle in the environmental scanning process. In order that we may assess the value of scanning and improve the effectiveness of the process, we ask that you evaluate the following areas. With the use of the following scale, please rate the statements below.

Rating Scale: **1** - *Agree* **2** - *Somewhat Agree* **3** - *Neither Agree or Disagree*
4 - *Somewhat Disagree* **5** - *Disagree*

A. Organization and Planning

____1. It was evident that the environmental scanning process was organized and well planned.

____2. It was evident that the environmental scanning process was well executed.

____3. Printed materials were of good quality and useful.

B. Execution of the Process

____4. The Kick-off Session was helpful in explaining the principles of environmental scanning.

____5. The Analysis Sessions were worthwhile.

____6. The process of concept mapping seemed to add value to the process.

____7. The multivoting process seemed to add value to the process.

____8. Small group discussion and communication with faculty and staff in diverse areas seemed to add value to the process.

____9. The Delphi survey and the process of eliciting external input was valuable.

___10. The Recommendation Writing Session was valuable.

___11. The final recommendations reflected the information that was collected and analyzed in the scan.

C. Communication

___12. The basic principles of environmental scanning were conveyed to me in a way that was easy to grasp.

EXAMPLE XXVII: Summative Evaluation

___13. Communication about the activities involved in the scan was maintained.

___14. Reports of the analysis sessions were helpful.

___15. The newsletter ***SCANOTES*** was helpful in keeping me informed of the scanning process.

___16. ***TITLE WAVES*** was helpful in enabling me to quickly scan the Grand Rapids Press.

___17. My questions about environmental scanning were readily answered.

___18. Adequate group interaction was encouraged during the scanning meetings.

___19. The project coordinator provided adequate feedback concerning my questions about the scan.

D. Relevance

___20. The environmental scanning process is a worthwhile endeavor.

___21. The goals of the process were clearly evident.

___23. The information which emerged from the scan will be valuable in the occupational education planning process.

___24. The information which emerged from the scan will be valuable in the planning process for GRCC as a whole.

___25. The information which emerged from the scan was valuable to me.

E. Logistics

___26. The number of meetings was adequate for facilitating the scanning process.

___27. Food and refreshments were satisfactory.

___28. The time allotted for the sessions was adequate.

___29. Meeting rooms were conducive to accomplishing the intended tasks.

EXAMPLE XXVII: Summative Evaluation (Cont.)

F.	**Understanding**
___30.	I have a good understanding of environmental scanning and its use in assessing the future needs of occupational education.
___31.	I feel that environmental scanning is a valuable addition to the occupational education planning process.
___32.	I feel that environmental scanning should be continued at the college.

33. What was the most valuable thing about the scanning process?

34. What one thing could be changed to improve the scanning process?

35. In what ways, if any, will you be able to use the information and concepts you learned from the scanning process in your own work?

EXAMPLE XXVII: Summative Evaluation (Cont.)

Circle the most likely reason in the two remaining questions only if you feel they apply.

36. If you were unable to read and abstract articles, the most likely reason was:

a. I did not have the time to be involved.

b. I couldn't work it in to my routine.

c. I was not interested in contributing.

d. I did not understand the process.

e. Other_____

37. If you were unable to attend the analysis sessions, the most likely reason was:

a. I did not have the time to be involved.

b. I had scheduling conflicts.

c. I was not interested in contributing.

d. I did not understand the process.

e. Other _____

Additional comments are welcome below.

THANK YOU for participating in the environmental scanning process and this evaluation.

Please return to Mark Champion, Room 102 North Building by February 8, 1993.

EXAMPLE XXVII: Summative Evaluation (Cont.)

ACTION:

Institutionalize the Process:

Now that a complete environmental scanning cycle has been experienced and thoroughly evaluated, a decision can be made as to the value of the endeavor. If the process adds value to the School of Occupational Education, full integration of the process into the regular planning cycle can begin. The involvement of such areas as strategic planning and institutional research become even more critical at this point. Institutionalization of the process occurs at many levels of the institution and efforts should be made to integrate scanning into the regular operations of the college.

Many issues will arise once the decision is made to make scanning a regular activity for the institution. What work unit will be responsible for continuing the scanning process and who will oversee the process? This issue, as well as others concerning the form in which the scan will continue, need to be examined. The steering committee again becomes an integral part of the process to institutionalize scanning. If the committee does not include all of the individuals able to make such decisions, it is time to include them.

Example XXVIII on p. 130, contains an excerpt from the recommendations made to the Dean of Occupational Education. These recommendations highlight some of the ways in which the process could be integrated more firmly into the everyday operations of the college. The results of both formative and summative evaluations, as well as any anecdotal information that may have been collected along the way, can assist you in the integration process.

OUTCOMES:

- A plan for institutionalizing the process.

Institutionalize The Process
Worksheet

1. What work area will pick up the responsibility of scanning?

2. Who will coordinate the scanning efforts?

3. How will scanning be integrated into normal operations of occupational education, the college?

4. Will the steering committee remain in place? If so, will the membership change?

5. Who should be added to the steering committee?

6. How will the environmental scanning effort be funded?

Issue 9
Community Colleges must be able to anticipate the future.

Recommendations:

9.1 Continue environmental scanning as part of the planning process of the School of Occupational Education.

A. Broaden the involvement of faculty and staff in the environmental scanning process. Open scanning to Liberal Arts, and Continuing Education for example:

1. Provide mentoring experiences for those interested in becoming part of scanning process

2. Explore a college-wide scanning process as input to overall strategic planning

B. Make the scanning process more effective/efficient

1. Leverage technology in order to:

a. decrease meeting time
b. efficiently collect, analyze and disseminate environmental scanning data
c. provide on-line data base searches on focus topics

2. Widen GRCC network access:

a. at the college in order to broaden the involvement of all faculty and staff
b. at home in order to facilitate data collection and dissemination of information

9.2 Involve faculty in defining "anticipating the future" in order to help the College anticipate that future as a team.

A. Create an "anticipatory" college culture by:

1. Engaging faculty and staff in an ongoing dialogue about the future through:

a. study groups around future topics
b. subscribing to futures publications
c. hosting programs on futures studies

9.3 Continue dialogue and establish partnerships with the community leaders, and area business and industry beyond traditional advisory committees with a goal of anticipating their needs.

A. Faculty in the workplace program
B. Continue to maintain and establish new local and regional data sources

EXAMPLE XXVIII: Recommendation for Anticipating the Future

ACTION:

Start a New Cycle:

Now that the decision has been made to continue the environmental scanning process and it has found a home within the institution, a discussion about starting a new cycle should ensue. The details of a new cycle should be discussed by the steering committee which continues to direct the environmental scan.

You must consider how frequently and over what period of time you will actively scan. Issues concerning the frequency of the scan should also be discussed at this time. This discussion involves a decision as to when the next scanning effort should occur, within what time frame, and how it would best be placed on the calendar for the purpose of assisting the planning process. The decision will be unique to each institution, but a discussion concerning whether the scan will be year-round, or follow the academic year with some down-time built in, needs to take place.

GRCC's pilot was conducted over an eighteen month period, but as mentioned before, a great deal of time was spent researching the topic of scanning and creating the deliverables for the grant. The continuation of the scanning process at GRCC will follow a plan similar to that laid out in Example XXIX, p 134. The continuation of the process was discussed at length by the steering committee and it was decided given the magnitude of the recommendations from the first attempt, it would be advantageous to build in an implementation period for those recommendations. Active scanning will begin again in September of 1993 and continue throughout the academic year. Hopefully, you will be able to benefit from our experience, by using the information provided to shorten the time frame of your scanning process.

Some thought should also be given to how new scanners will be recruited and trained. Will the scanners from the last cycle remain on the team or will new scanners

be added? In the GRCC scan, interest in trends and issues will be maintained during the time that the recommendations are being considered, through the release of short bits of scanned information distributed to interested GRCC faculty and staff. The Office of Institutional Research will be responsible for releasing this trend information. A shortened form of ***SCANOTES*** will also be distributed and will include news about the progress being made on the recommendations. As more people become interested in the release of the trend information, it is hoped that we can recruit them as active scanners when the new cycle begins.

OUTCOMES:

- A plan for recruiting and training new scanners.
- A time line and plan for the next round of scanning.

Start A New Cycle
Worksheet

1. What will be the time frame for the next scan?

2. How can technology be leveraged to decrease the time involved in scanning and increase the efficiency of the process?

3. Will the scanning team remain the same? If so, how will you deal with attrition?

4. What is the mechanism for recruiting and training new scanners?

5. Should scanning be expanded to include those beyond the traditional definitions of occupational education?

ENVIRONMENTAL SCANNING

RECOGNITION:

(Late March-Early April)	Hold a reception for participants in the pilot
	Letter from President Calkins thanking for effort
	Review of the process from present until September
	Subscription to Scanners-On The Horizon-U of NC, Chapel Hill
	Framed Certificates or Plaques

STARTING A NEW CYCLE:

March-April	1.	Review actions to be taken on recommendations. a. Dissemination of recommendations b. Form focus groups to study possible actions
April-August	2.	Assist any focus group by providing research assistance: a. provide best practices b. collect models relevant to focus groups
April-August	3.	Provide regular trend releases about issues that may affect GRCC. a. offer information to original scanners b. offer information to other interested GRCC personnel c. Invite new group of scanners from those receiving the trend information.
Present-August	4.	Research ways to make the scanning process more efficient.
Sept.-May	5.	Start new cycle: September through May (93-94 academic year).

EXAMPLE XXIX: Recognition and Starting a New Cycle

Appendix 1: Model Characteristics

Model Characteristics

A joint project of Grand Rapids Community College and Michigan State University is seeking to apply the general principles of environmental scanning to the planning process in occupational education. The steering committee identified ten characteristics that the model should have in order to be useful to and effective for occupational education. These characteristics guided the literature review and model development.

1. **Continuous** - The process should be one that can be carried out continuously and not one that must necessarily have a beginning or end.

2. **Simple** - The process should not be so complex and technically abstract that highly paid experts must be engaged to run it. It should be simple enough so that administrators with a modicum of research experience and little formal training in statistics and computer applications can apply it.

3. **Qualitative and Quantitative** - Provide information on the changes in the nature of the workplace and the number of jobs, employees, etc.

4. **Detect "Quantum Jumps" of Change** - The process must report sudden changes or anticipated sudden changes that do not follow by extrapolating perceived trends.

5. **Localized** - Information generated by the model must apply (preferably apply only) to the college's own geographic area of interest. This may not always coincide with the college's official "district," defined as that region whose inhabitants pay local property taxes for the support of the college. This "region of interest" needs to be defined by each college for itself.

6. **Anticipatory** - The model must focus on the future, and not dwell on the past. It must project trends one to five years. It should be able to discern present trends by the analysis of current information and then project those trends, not necessarily linearly, into the reasonably distant future (e.g. one to five years). As pointed out in 2 and 3 above, however, it should not rely exclusively on the extrapolation of quasi-continuous data.

7. **Replicable** - The model must be applicable to large urban colleges, small rural colleges, downtown and suburban colleges, i.e. the gamut represented by Michigan's 29 public community colleges.

8. **Cost Effective** - If the process costs too much to operate, it will not be used, no matter how satisfactory it is in other respects. College administrators must feel it is worth the cost and effort.

9. **Limited to Occupational Education** - The model must determine education and training needs related to occupational education. Although it might be tempting to extend the scanning process envisioned in the model to be comprehensive, the present project is limited in scope to the determination of community needs related to occupational education.

10. **Relevant** - The model must be relevant to the mission of the college. This, of course, is idiosyncratic and must be determined by each institution itself. It does little good, for example, to go to great lengths to determine needs for short term, tailor-made training if the college does not include this kind of service in its mission or purpose.

Appendix 2: Tools, Techniques, and Matrices

Tools and Techniques

Each of the cases described in the Literature Review used a somewhat different process for developing an environmental scan and disseminating results. Committees were used, varieties of documents were read and synthesized, and meetings were held to discuss the importance of data to the institution. In their own ways, each institution applied the principles of **focus, continuous monitoring, involvement, and integration** in their scanning and planning efforts. These cases were meant to provide some idea of the various ways in which environmental scanning techniques can be selected and used in higher education. The Facilitator's Guide describes the methods we used to carry out the scan. This section will offer further detail on some of the various techniques that can be used and also describe others which community colleges may find applicable.

Print Review

Without a doubt, the most commonly cited technique for acquiring information on the external environment is through print review, or reading. In some cases, this is the only source that is used. In a typical case, a number of volunteer or staff scanners read a variety of print sources to learn what is happening, or likely to happen, in the external environment. One reviewer might scan The New York Times, Computer World, and The Chronicle of Higher Education. Another scanner might read Mother Jones, American Demographics, and The Futurist. Summaries of data may also be scanned, including scans published by other colleges or organizations. As a scanner reads, s/he abstracts those articles which are relevant to the college. A central source then collates those abstracts and tracks them, either electronically or manually. At the back of this document are some suggestions for print sources that might be reviewed in a scanning process.

Networking

While reviews of print data sources may be the most commonly cited means of systematically collecting data about the external environment, networking is probably the most commonly practiced. Simply talking with people in the community, particularly with leaders and policy makers, can allow the scanner to acquire useful and up-to-date information. This is particularly true as a scanner is looking at the local or regional implications of a trend.

The keys to making networking effective are to make it systematic and regular. Information gathered through networking must be able to find its way into the scanning system. Just as print information is abstracted and gathered, so too should networking information be abstracted or summarized and gathered in a central location. Networking

OCCUPATIONAL EDUCATION SCREENING MATRIX FOR ENVIRONMENTAL SCANNING

REPORTING OPTIONS

Model Characteristics/ Option (page #)	Continuous (1)	Simple (2)	Qualitative and Quantitative (3)	Detect Quantum Jumps (4)	Localized (5)	Anticipatory (6)	Replicable (7)	Cost Effective (8)
Written reports (133)	2	3	4	2	5	4	5	4
Issues papers (134)	2	3	4	3	4	5	5	4
Newsletters (134)	3	3	4	3	5	4	5	4
Conferences (134)	3	3	3	3	5	3	5	4
Meetings (135)	3	5	4	4	5	4	5	4
Networking (135)	5	5	2	2	5	3	5	5
Data bases (136)	5	2	3	3	4	4	4	3
Electronic Reporting (137)	5	2	3	3	4	3	3	2

1 = least able to fulfill the requirements of the characteristic
5 = most able to fulfill the requirements of the characteristic

Figure 3

should also be regularized. If there are significant leaders, or people who tend to have advanced knowledge about a subject, they should be contacted regularly so information does not slip though the cracks. When looking at Occupational Education, regular, informal meetings with business leaders in the labor market can be invaluable. By the same token, reviewing the trade journals of those same business leaders should be an essential part of print scanning.

Surveys

Surveys may serve two primary purposes in scanning. First, they may be used to collect perceptions about the future from inside and outside the college. Questions that ask community or business member about their needs from the college or their views on where they see their business going can be very helpful in directing a college's planning. Surveys may be done annually to provide continuous monitoring of the external or internal environment. A more specialized form of this type of surveying, the Delphi, is described in detail below.

Surveys may also be used after a scan has been produced, or while it is in process, to provide feedback to planners. A survey that asks respondents to rate likely scenarios or change trends by importance or likelihood, can contribute to a college's discussions of its future.

Taking the time to carefully construct a survey and to pilot it before broad dissemination will be time well spent. Phone surveys generally have a higher response rate than mail surveys, but typically cost more and may not be able to cover as many topics. A well done survey can also meet some of the other goals of scanning, besides planning, such as market research and friend and fund raising.

Delphi

Delphi is a specialized form of survey that focuses on soliciting the opinions of experts on a given question. The panel of experts is asked, through a series of questionnaires, "to judge the timing, probability, importance, and implications of factors, trends, and events with regard to the subject under consideration" (Coates, 1986, p. 70). In the Delphi process, an initial survey is sent to a preselected set of experts which may number as few as 10-20 or as many as 50-100. The respondents rate or rank the statements along a continuum. For example, a panel of local business and community leaders might be asked how likely they think it is that present businesses will expand in the next three to five years. Once responses to the first round of questions are received,

they are compiled and answers which are in the upper and lower quartiles on each continuum are identified. People who provided the extreme opinions are asked to offer their rationales for them. Those rationales are then supplied to the entire respondent panel and they are asked to again respond to the survey. In some cases, a third round is also done.

The process of repeated review tends to bring the responses into a more narrow range. The assumption is that the final set of responses represents a more accurate forecast than the guess of a single expert. It is important to remember, however, that the responses to a Delphi questionnaire are opinions and not facts. While it is helpful to solicit expert or even non-expert opinion in a systematic way, the results are subjective and not objective. The Delphi process is particularly useful when you want broad thinking about a topic, but not when more accurate predictions are needed. As with any survey, careful planning of the questions and pre-testing will greatly increase the quality of the data gathered.

Scanning Meetings or Events

An effective way to quickly gather information on the external environment is to host a scanning conference or event. The focus of the meeting is on learning the thoughts of external and/or internal people as they relate to the college and its future. There as many ways to structure such a day as there are information topics to be covered. In some of the models presented above, a scanning event was used to record people's ideas on how broad information about trends and events was likely to affect the college. In other instances, the event may ask people to envision the future and use that as an indication of trends to watch and plan for. In effect, a scanning meeting is an opportunity to do large scale networking for information gathering. It can also provide a marketing opportunity, as community leaders are likely to gain a greater awareness of the what the college offers and to feel invested in the college or program as they see their opinions valued.

Before any such meeting, spend time identifying the information to be obtained and the other goals, such as internal consensus building, that the event may meet. Based on those needs, identify the constituent groups who can best meet those needs and develop strategies for getting the opinion leaders in those groups to the event. Begin with an overview of the college or Occupational Education at the college and the goal(s) for the day. Most of the day, however, should be spent in discussion groups. You may "Trigger" material, such as a broad scan for them to review may be useful to set the stage. Having specific questions for participants to respond to is another strategy. Following the session, provide the participants with a summary of their responses and a sense of how the information gathered will be used. As with a survey, if this is an annual event, information can be continuously updated.

Tools and Techniques (continued)

Brainstorming

Brainstorming is a technique with broad applicability to many of the other methods described here. Brainstorming simply allows participants to generate ideas without concern about their relative value. Brainstorming may be used to generate possible futures, to develop lists of potential effects of different scenarios on a college, or to solicit opinions about what should be scanned. The rules of brainstorming are fairly broadly known and most people are easily able to engage in a brainstorming process. Brainstorming has a particular place in scanning because it encourages people to think creatively about an issue or problem. Creative thinking is an essential ingredient when Occupational Education is looking at its possible futures.

Non-print Media

While much of the literature on sources of data focuses on print review, non-print media can also offer a useful resource for scanners. Some national scanning reports provide information on the number of minutes devoted to different topics in the non-print media. At a local level, paying attention to speeches, special broadcasts on radio or television, and advertising trends can add an important dimension to a scanning data base. Just as print scanners may regularly read a specific magazine or journal, non-print media scanners should also regularly follow and provide abstracts of information gained while listening to radio or watching television. National Public Radio and the Public Broadcasting Service have programs which often focus on subjects which may have information relevant to sociocultural, economic, technological, or legal-political trends. Some radio stations broadcast speeches from the National Press Club, economic forums, or other local or regional forums. Such speeches may offer insights from experts not otherwise available to a scanner. As with print scanning, non-print media abstracts should make their way to a central data repository.

Data Bases

There are numerous data bases at the national, state, and local levels which may be available to a scanner. National census data, data from the National Center for Educational Statistics, or the Bureau of Labor Statistics, all may be useful in helping provide a framework for local issues. State and local planning agencies, utility companies, the United Way, and school districts all may have demographic or other data which can help the scanner. Sometimes such data is available in paper form. Sometimes a scanner may wish to gain access to the data base to ask specific questions about the region or locality.

Tools and Techniques (continued)

Whether or not a scanner can manipulate the data in a data base or must rely on printed summaries, data bases provide crucial information, particularly on demographic and local economic trends.

Whenever possible, it is useful to obtain local or regional data, since national trends can "break down" in specific localities. For example, California often figures prominently in national trends because of its size. A significant trend in California is the increasing number and diversity of language groups which must be accommodated in schools and the work force. While other areas of the country are also experiencing increased diversity, the trend may not be as great or as significant as it is for California. If only national data were being used, a locality might believe it had to act on language diversity before other issues which may in fact have more local saliency.

Electronic Bulletin Boards

More and more, people are communicating across the country with electronic bulletin boards and mail systems. Virtually every university in the world with computers is connected through BITNET or E-MAIL systems. There are countless bulletin boards which focus on specialized subjects. These electronic communication systems can offer the scanner a way to interact with experts, to learn how other parts of the country are responding to or thinking about trends and issues, and a source of information about the world. Organizations with access to electronic communication can update information much more frequently than was ever possible with newsletters or other print distribution methods. If there are bulletin boards of particular interest to a college, they should be assigned to scanners and regularly monitored. Information gained from that monitoring should be abstracted for the scanning data base just as any other information is.

As with the techniques of gathering information, there were a variety of ways that institutions chose to analyze the data they compile during their scanning efforts. Below are listed a number of methods for synthesizing and analyzing the data produced by ongoing scanning efforts.

Scenario Building

Scenarios are a way to help an audience make sense of the variety of separate data points they confront when they review trends and issues identified in a scan. Scenarios can be defined as "a hypothetical sequence of events constructed for the purpose of focusing attention on causal processes or decision points" (Kahn and Weiner, 1967, p. 6). A scenario paints a word picture of how different possible trend lines could unfold for a college. The scenarios can then be used to help frame discussions for how the college might respond

to each of those potential futures. Whiteley, Porter, Morrison, and Moore (1989-90, p 49) have identified three steps in the scenario building process.

- identifying factors expected to affect the forecasting situation or issue
- postulating sets of plausible future values for these factors
- combining large numbers of values and interrelationships of these factors into a multiple set of scenarios or alternative futures

Scenario building begins, then, with the identification from scanning of the factors of greatest relevance to the college's future. Data on trends and emerging issues is summarized for those factors. Then, either a committee, an expert panel, or the solo scanner, rates those factors on a variety of dimensions. Commonly used dimensions for assessing events and trends are likelihood, effect or impact, and the time frame within which the trend or event is likely to occur. These dimensions are often subjected to cross impact analysis (see below for detail on this method). The result of analyzing a scan in this way is then used to write scenarios.

There is no limit to the number of scenarios which can be written. Scenarios may focus on the steady state where it is assumed that there are few dramatic changes in the external or internal environment and business can be conducted largely as it has been in the past. However, the basic premise of scanning would suggest that this is rarely the case. Of more use are scenarios which project futures qualitatively different from the present. They may be based on futures with more or less predictability or futures that place more or less weight on specific events occurring.

The goal of writing scenarios is to help decision makers focus on the ways in which different futures require present preparation and response. It is not to accurately predict the future. In fact, by helping decision makers see different futures, the environmental scanner can help them shape the future to the one they find most desirable.

Cross Impact Analysis

While cross impact analysis may be used to build scenarios, it can also stand on its own as a method for analyzing data gathered from scanning resources. Cross impact analysis can require considerable time and energy, if it is to be done effectively, particularly since it is best done with group input. In a traditional cross impact analysis, a small number of trends or events are identified as important to the organization or issue. These are then arrayed in a matrix and subjected to review with such questions as, "If event A occurs, how will it affect the likelihood of events B, C, or D occurring?"; or "If event A occurs, how will it affect the impact of event B, C, or D, if they also occur?" By gathering opinions from a number of decision makers and allowing them to compare their relative ratings, consensus can begin to emerge on which trends or events must be included in any planning process.

Tools and Techniques (continued)

An alternative, and somewhat simpler way, of analyzing identified trends and events also has them rated on one or more of the dimensions listed above-- likelihood of occurrence, impact on the organization, or the time frame in which it may occur (how soon and for how long might it effect the organization). These ratings are then combined to produce a weight for the trend, event, or issue. This weight can help a group of decision makers discuss and prioritize as they do with the more traditional cross impact analysis. Because the effects of trends and events are not directly compared (i.e. how does A affect B) this technique may not be quite as powerful. It has the advantage, however, of being considerably less complex and time consuming, while still allowing some level of comparison between issues, trends, and events.

Group Reviews

Once a scanning report is produced or data on issues and trends are organized through abstracts or summaries, internal committees can serve as useful analysis tools. This is particularly true when those committees consist of the decision makers who must act on the data. Again, a number of the higher education models presented above relied exclusively on committees to review and analyze data from scanners. These committees may or may not use techniques such as scenarios or cross impact analysis to synthesize scanning information. Often, simply the review and discussion of how issues and trends may affect the college will be deemed sufficient analysis.

When committee review is the analysis method used by a college, the way in which data is presented to such committees becomes particularly important. Graphics, clear concise fact statements organized by trends or issues, and summaries which attempt to tie together strands can be extremely useful.

Computer Assisted Techniques

With the ready availability of statistical and other analysis software for personal computers, computer analysis of data has become far more feasible. Such analysis may be doing "what ifs" on a spreadsheet or more sophisticated statistical techniques, such as regression or factor analysis. For example, a computer can make cross impact analysis easier as ratings can be entered into a computer to develop weightings, percentages, or other measures of interactive effects. Simulations and model or scenario building can also be aided by software packages which focus on strategic planning and forecasting. Data bases built to track the types of articles being scanned and abstracted can be analyzed to demonstrate trends, such as the number of times a key word appears. While colleges may vary by their ability to purchase and utilize computer software and hardware, computer assisted techniques should not be overlooked for analysis.

Tools and Techniques (continued)

Trend Extrapolation

The basic premise of trend extrapolation is that identified trends, such as the shift in age of the population, can be extended into the future to determine their effects on the organization. Trend extrapolation is probably most useful in demographic analysis, but may used in economic analysis also. Trend extrapolation may or may not be used with computer assistance. When data can be entered into a computer, then trends can be extended or changed through "what ifs" to allow scanners to see how alternate developments may affect those trends. In many ways, trend extrapolation is very similar to scenario building, with trend extrapolation providing the "raw material" for the interweaving of trends into a scenario.

Written Reports

Written reports are a commonly used method of reporting the results of an environmental scan. The many types of reports written differ in two basic ways. They differ in their **frequency** and in their **target audience**. Initial and updated reports of a large environmental scan are usually issued only annually. These reports often have a very broad audience in mind, such as the entire college community, the college and business community, or even a national audience. Their comprehensiveness means that they can be useful to many people, particularly as triggers to further discussion and analysis. However, they not provide the specifics that a particular decision maker needs without further study. For example, a department in a college might reflect on such a broad scan by doing its own analysis and mini-scan of the factors most relevant to its decision making about curricula or programs. When preparing a comprehensive scanning report, it is important to keep in mind how it can and will be used in the college community. Often short fact statements can work as effectively as narrative in conveying the results of the scan.

Shorter written reports may be issued more frequently, depending upon the needs of the college and the way scanning has been organized. If scanning committees meet, for example, on a quarterly basis, they may issue interim reports on their deliberations. These reports may be targeted at specific audiences, such as administrators or department chairs. Or the results of their reviews may appear as a newsletter (see below) rather than as a more formal report. Again, the target audience for the material is what will determine the content and format of the report.

Tools and Techniques (continued)

Issues Papers

The results of a comprehensive environmental scan may also be reported through a series of issues of papers. This option focuses the content of the scan on a limited number of issues critical to the college and explores them in depth. While they may begin with a set of fact statements, like a broad scan report, they then analyze the implications of those facts in greater detail. Issues papers may use scenarios as a way to focus the discussion of the facts and their potential effects on the college. The audience for issues papers will generally be top level decision makers, although they may have wider dissemination within a college. Issues papers may be particularly useful at the start of a scanning process to focus participants on how scanning facts translate into the need to "change the way we do things around here".

Newsletters

Newsletters are an effective method for keeping the results and importance of scanning activities in front of people. Generally, they are targeted at staff and faculty inside the college. They may provide a summary of scanning updates, an in-depth look at an issue, reviews of books or articles of relevance to the college, or any other of a number of types of content. The goal of newsletters is to both keep people current on the college's scanning activities and to keep the process of scanning before them. A scanning newsletter may be published any number of times during a year depending on staff resources, the amount of information to be disseminated, and the general needs of the college.

Conferences

The next five options for reporting-- Conferences, Meetings, Networking, Data Bases, and Electronic Reporting-- are ones that have also been mentioned as techniques for gathering or analyzing information. As an environmental scanning process evolves, it may be possible to combine the reporting function with either information gathering or analysis.

The term conference is used here to designate any large gathering of people to disseminate the results of environmental scanning. Generally, some type of written report would be presented and discussed at a conference. While a conference takes careful planning, using it as a vehicle to reach a broad audience with scanning results can be very useful. One advantage of a conference is that it allows many people to hear the same message at once and to discuss its significance together. A college may choose to include an annual conference with its updating of its scan or it may decide to just do a conference when it presents its initial scan results. In any case, it offers the opportunity for people to hear the results of a scan, to be involved in the scanning process, to better understand the importance

of scanning, and to look at how the scan results may affect them. By being clear about what its goals are, a college can maximize its investment in an environmental scanning conference.

Meetings

Meetings are smaller gatherings than conferences and may have more targeted goals. Meetings of selected faculty, staff, or administrators are effective ways of have localized decision makers reflect on the results of an environmental scan. As with conferences, meetings would usually be accompanied by some form of written report to help trigger and focus discussion. Discussions at a meeting might revolve around such topics as; how the results affect curriculum or programs under consideration, what structural changes the department might want or need to make to meet the challenges of the scan, what new areas does the department want to explore, what other areas might the department want to scan, or how can scanning information best be used in decision making. Meetings can happen as frequently as needed. As scanning evolves at a college, information from scanning may simply become part of other regular meetings, such as faculty or planning meetings, and not be separated.

Networking

Networking is a relatively simple way to exchange information from scanning with the community. It does not have the regularity , focus, or predictability that meetings or conferences have, so it tends to have less effect on the decision making and planning processes. However, networking should not be overlooked as a way to get facts and information of importance to the community out to community leaders. As when it is used in information gathering, networking for reporting works best when it is systematic and regular. Plan on meeting with community or business leaders at specific times in the year to informally share the results of a scan. College administrators and others who sit on community boards can act as networking conduits to outside organizations. Most information that the college is learning has some relevance to the broader community and should be shared with them.

Data Base

The data base that a college develops to help it analyze environmental scanning reviews can also serve to report on those reviews. Whenever possible, a data base should be constructed so as many people as possible have access to the information on it. That enables a faculty or staff person to use the most recent summaries available in decision making,

course construction, or research. Access to data reinforces the usefulness and importance of scanning and may increase the number of volunteer scanners that can be recruited. When people can use the information they are providing, they are more likely to continue to offer to scan.

Electronic Reporting

Electronic reporting provides a way to disseminate scanning information both within a college and to the broader higher education community. Many colleges have access to electronic mail systems. Just as they could prove useful for gathering scanning information, they can also offer reporting options. A specific bulletin board with the latest environmental scanning tidbits and discussions might be initiated. Any written reports, issues papers, or newsletters produced in hard copy can also be transmitted electronically. Access to the scanning data base may also be possible, combining two reporting options. Electronic communication also allows colleagues across schools to discuss their ideas about how scanning affects their programs and what new information they have learned. In many ways, electronic reporting can enhance the environmental scanning efforts of a single community college, as well as making reporting within the college as timely and relevant as possible.

OCCUPATIONAL EDUCATION SCREENING MATRICES

Introduction to the Matrices

Occupational Education has some specific qualities that differentiates it from other parts of the community college. It must have much more interaction with the local and regional business community. It needs to be aware of the local labor market and the present skills of the labor force. In general, Occupational Education needs to have ways to be both more responsive and more anticipatory of its markets. These needs have been translated by the Steering Committee developing this model into characteristics that they feel a model of environmental scanning for Occupational Education should have. These characteristics are defined below, in the committee's words, and then used to rate each of the techniques for data gathering, methods for analysis and reporting options presented in the previous section.

Using the Matrices

The matrices on the next three pages rate each of the techniques for gathering scanning information, the methods of analysis, and the reporting options on the first eight model characteristics. These characteristics were identified as directly related to the needs and likely resources of Occupational Education at a community college. The last two characteristics, limitation to occupational education (9) and relevance to the college's mission (10) are not included. The first because it is inherent in the rating system, and the second, because it can only be determined by each occupational dean. Each technique, analysis method, or reporting option is rated on a scale from 1 to 5. A 5 indicates that the technique or method best meets the characteristic it is being rated on. The general descriptions of each numerical rating are given below.

1 = unlikely to fulfill the requirements of the characteristic

2 = somewhat able to fulfill the requirements of the characteristic

3 = able to fulfill the requirements of the characteristic

4 = very able to fulfill the requirements of the characteristic

5 = fulfills the requirements of the characteristic as well as possible

For example, under "Continuous", the technique of "Print Review" is rated as "5" because it is designed to be done continuously and that can easily be accomplished through a variety of applications (i.e. solo scanner, staff scanners, volunteer scanners, etc.).

OCCUPATIONAL EDUCATION SCREENING MATRIX FOR ENVIRONMENTAL SCANNING

INFORMATION GATHERING TECHNIQUES

Model Character-istics/ Technique (page #)	Continu-ous (1)	Simple (2)	Qualita-tive and Quantita-tive (3)	Detect Quantum Jumps (4)	Localized (5)	Anticipa-tory (6)	Replic-able (7)	Cost Effective (8)
Print Review (126)	5	5	4	3	4	4	5	4
Network-ing (126)	5	5	3	2	5	3	5	5
Surveys (127)	3	2	5	2	5	4	4	2
Delphi (127)	3	2	3	4	3	4	4	2
Meetings (128)	3	3	3	3	5	3	5	3
Brain-storming (129)	4	5	1	4	5	4	5	5
Non-print (129)	5	5	4	3	4	3	5	5
Data Bases (129)	4	2	4	3	2	2	5	2
Bulletin Boards (130)	5	3	1	3	1	2	4	3

1 = least able to fulfill the requirements of the characteristic
5 = most able to fulfill the requirements of the characteristic

Figure 1

A2-154

OCCUPATIONAL EDUCATION SCREENING MATRIX FOR ENVIRONMENTAL SCANNING

ANALYSIS METHODS

Model Character-istics/ Method (page #)	Continu-ous (1)	Simple (2)	Qualita-tive and Quantita-tive (3)	Detect Quantum Jumps (4)	Localized (5)	Anticipa-tory (6)	Replic-able (7)	Cost Effective (8)
Concept Mapping (Append-ix 5)	5	3	1	3	1	2	3	3
Multi-Voting (Append-ix 6)	4	1	1	4	1	3	2	1
Scenario Building (130)	3	2	2	4	5	5	4	3
Cross Impact (131)	3	2	1	3	5	5	3	4
Group Reviews (132)	4	4	3	4	5	4	5	5
Computer Analysis (132)	3	1	4	2	3	2	5	2
Trend Extrapo-lation (133)	3	3	4	2	4	5	3	3

1 = least able to fulfill the requirements of the characteristic
5 = most able to fulfill the requirements of the characteristic

Figure 2

Appendix 3: Time Line

ENVIRONMENTAL SCANNING TIME LINE
REVISED

Date	Activity	Persons Responsible
February 21, 1992	**Kick-off Activity** **Scanning Begins**	**Steering Committee** **GRCC Scanning Team**
April 6, 1992	Abstract Report Out to Scanning Team	Project Coordinator
April 24, 1992	**First Analysis Session: Concept Mapping**	GRCC Scanning Team
April 24, 1992	First ***SCANOTES*** Out. Distributed to Scanning Team and Other Stakeholders	Project Coordinator
May 29, 1992	***SCANOTES*** Out with Analysis Session Report. Distributed to Scanning Team and Other Stakeholders	Project Coordinator
*July 8, 1992 10 a.m. - 12 n	Meeting 1. Discuss/revise Time Line 2. Derive Trend Statements	Steering Committee
July 22, 1992	***SCANOTES*** Out ***TITLE WAVES*** Out	Project Coordinator
July 22, 1992	Preliminary Abstract Report to Steering Committee and Selected Scanners	Project Coordinator
July 31, 1992	Issue Statements to Steering Committee and Selected Scanners	Project Coordinator
*August 5, 1992 10 a.m. - 12 n	Meeting: Second Analysis Session Concept Mapping: Sort and Rate Issues Collected Since Last Analysis Session	Steering Committee and Selected Scanners
August 14, 1992	Initial Concept Map out to Second Analysis Participants with instructions to derive Issue/Trend Statements from the Map	Project Coordinator Steering Committee and Selected Scanners
August 21, 1992	Issue/Trend Statements from Concept Map # 2 are returned to Project Coordinator	Steering Committee and Selected Scanners
September 3, 1992	***SCANOTES*** Out	Project Coordinator
*September 9, 1992 3 p.m. - 5 p.m.	Meeting Issue/Trend Statements from both Analysis Sessions are discussed and synthesized. Result: Issue/Trend Statements from the two scans	Steering Committee and Selected Scanners

September 18, 1992	Materials for Analysis Session Out	Project Coordinator
September 29, 1992 **12 noon - 3 pm**	**Analysis Session** Using a Multivoting Technique, participants will Select the 15 Issues which are most likely to impact occupational education	GRCC Scanning Team
*October 7, 1992 3 pm - 5 pm	Meeting: Review Analysis Session Results	Steering Committee
October 9, 1992	Results of the Analysis Session are Compiled and put into a format that can be used in a Delphi Questionnaire	Project Coordinator
*November 11, 1992 3 pm - 5 pm	Meeting: Delphi Results Discussed Planning for Analysis Session	Steering Committee
November 20, 1992 12 noon - 3 pm	**Final Analysis Session** The results from the Delphi discussed. Recommendations drafted based on the results.	GRCC Scanning Team
***November 25, 1992** 10 am - 12 noon	**Meeting** Recommendations Discussed. Project Coordinator to Write Draft and Distribute to Steering Committee	Steering Committee
December 16, 1992	Draft Recommendations Disseminated to Steering Committee	Project Coordinator
December 21, 1992	Draft Recommendations Revised and Disseminated to GRCC Scanning Team	Project Coordinator
January 15, 1993	Recommendations Submitted to the Dean of Occupational Education	Project Coordinator
January 18, 1993	Project Evaluation Disseminated to all participants	Project Coordinator
February 15, 1992	Final Report Submitted	John Mackenzie/Project Coordinator

* Steering Committee Meetings which involved Analysis Techniques necessary to the scan.

Bold indicates Analysis Session for the entire group

Appendix 4: Kick-Off Materials

TO: 1 ~

FROM: Mark P. Champion

DATE: February 5, 1992

SUBJECT: Environmental Scanning Workshop

****

* **According to the U.S. Department of Labor, seven of the 10 fastest-growing occupations between 1988 and the year 2000 are health-related.**

* **High-tech jobs may grow by 12 percent annually through the mid-'90s.**

These national trends related to occupations reported in John Naisbitt's Trend Letter may or may not affect us in our regional area.

Would you like to have a better understanding of what will happen in the greater Grand Rapids area?

Then join us for the Environmental Scanning Workshop provided to kick-off the pilot project on Friday, February 21, 1992 from 12 noon until 3:30 pm in Room 118 of the Applied Technology Center. The purpose of the session is to orient "scanners" to the process. A lunch will be served at noon.

Attached is a survey which will enable us to match up what you are already reading with what information we need scanned. Fill out the form as completely as possible and return it to my mailbox. Please return the form regardless of whether you can attend the workshop.

We look forward to seeing you at the workshop. Please contact me at 458-6805 if you have any questions.

ENVIRONMENTAL SCANNING for OCCUPATIONAL EDUCATION

KICK-OFF EVENT
Friday, February 21, 1992

12 noon		Gather for lunch.
12:10-1:00		Welcome: Till Peters Lunch

I. FOCUS ON THE FUTURE

1-1:20	A.	Opening Remarks: Till Peters
	B.	Keynote: Grand Rapids Area in the Next 20 Years: Steve Nobel, Assistant Director, The Right Place Program
1:30-1:50	C.	Issues Management and Environmental Scanning: Lorilee Sandmann
	D.	A local perspective: Ray Hoag

II. OVERVIEW OF THE PROCESS AND PROJECT:
Mark Champion/Lorilee Sandmann

1:50-2:15	A.	What is the Environmental Scanning Process?
	B.	Who will be involved?
	C.	What will we do? 1. Scan 2. Analyze Data 3. Report/Recommend-Lorilee
	D.	When will we do Environmental Scanning?

III. SCANNING PRACTICE: Lorilee/Mark

2:15-3:15	A.	Abstracting information
	B.	Prioritization of emerging issues

IV. YOUR COMMITMENT: Till

3:15-3:30	A.	How we will make it work

TREND QUIZ

1. The median age of the labor force will be _____ years old by the year 2000.

   a. 25
   b. 30
   c. 35
   d. 40
   e. 45

2. Shortening the cycle from conception of a product to it's commercialization is a major trend now seen in manufacturing. Hewlett-Packard cut the time it took to develop new computer printers from 53 months to _____.

   a. 40
   b. 36
   c. 32
   d. 26
   e. 22

3. The fastest growing segment of education is the:

   a. K-12 System
   b. Community College
   c. Private Technical School
   d. Private 4 Year College
   e. Public University

4. In 1988 only 1% of the plastics manufactured in the U.S. were recycled. By the mid-1990s what percent will be recycled?

   a. 5%
   b. 10%
   c. 20%
   d. 25%
   e. 30%

5. Multiskilled robots have been developed for many things. Select the skill that robots will be unable to perform in the hospital setting.

   a. take food and medicine to patients
   b. transport blood samples and medical records
   c. summon. the elevator to change floors
   d. perform surgical procedures
   e. none of the above

TREND QUIZ KEY

1. The median age of the labor force will be _____ years old by the year 2000.

d. 40

Trend: **The demographics of the U.S. workforce are changing. The workforce of the future will be older, more diverse, and more family-oriented.**

2. Shortening the cycle from conception of a product to it's commercialization is a major trend now seen in manufacturing. Hewlett-Packard cut the time it took to develop new computer printers from 53 months to _____.

e. 22

Trend: **In virtually every industry, from electronics to food production, manufacturers and marketers are accelerating the time it takes to get products to the marketplace. The movement represents a fundamental shift in manufacturing and distributing.**

3. The fastest growing segment of education is the:

b. Community College

Trend: **Over the nest few years and into the next decade, more and more college students across the country will look to two-year schools to receive a quality, low cost, education.**

4. In 1988 only 1% of the plastics manufactured in the U.S. were recycled. By the mid-1990s what percent will be recycled?

d. 25%

Trend: **Recycling wood, paper, plastic, metal and other materials before they reach the Nation's landfills will rank among the U.S's growth industries through this decade.**

5. Multiskilled robots have been developed for many things. Select the skill that robots will be unable to perform in the hospital setting.

e. none of the above

Trend: **Before the turn of the century, robotic workers could become commonplace throughout the work environment-and in public places as well.**

GRAND RAPIDS COMMUNITY COLLEGE
ENVIRONMENTAL SCANNING FOR
OCCUPATIONAL EDUCATION AND TRAINING

ABSTRACT FORM

Scanner's Name: *John MacKenzie* Date: *2/12/92*

Division: *Computer and Information Sciences* Department

Source: Publication *X* Conf./Meeting Media Other

Title: (Article, Session, Show): *Multimedia Uses Expected to Grow*

Author/Speaker/Reporter: *Jeanette Borzo*

Title /Role/Position: *Reporter*

Publication/Conf./Network *Info World*

Date: *2/10/92* Pages: *19 and 28* Volume: *14* No.: *6*

International *X* National State Regional Local

Summary

This article summarizes a study "Multimedia Systems and Services" completed by Grassroots Research of San Francisco and Prognos AG of Basel, Switzerland. Grassroots can be reached at 415-954-5493.

Major Trend

- *Improvements to CD-ROM technology - such as price, speed, and video quality - should increase the use of multimedia in corporate training.*
- *U.S. Market for multi-media will grow 53 percent between 1991-1995.*
- *Video conferencing with multi-media on the desktop should increase 81 percent between 1991 and 1995.*
- *Sales Support/Information KIOSKS market will grow 84 percent between 1991 and 1995 according to the study but some corporations still need third parties to create and install kiosk systems.*

Implications

- *Identify GRCC programs related to multimedia.*
- *Identify the potential of interdisciplinary courses*
- *Identify local conditions (businesses, labor market etc.)*

Trend *x* Issue Event

Key Word: Primary *Multi-media* Secondary *Forecast*

TO: 1 ~

FROM: Mark P. Champion

DATE: February 28, 1992

SUBJECT: Environmental Scanning Workshop

****

Thank you for attending Friday's Environmental Scan Kick-Off. We hope that you found it informative as well as useful. Your commitment to the scanning project will ultimately be of value to you, the School of Occupational Education, and GRCC as a whole.

In order to put your scanning expertise into action, we would like to see you start to abstract articles beginning this week. If you still need a computer disk containing the abstract form give me a call at 458-6805. When you request a disk please designate the format that will work best on your machine (5 1/4, 3 1/2, high or low density). Foxpro users will be receiving more information shortly. A slightly revised form, based on comments gathered at the workshop, will be available next week. We will make sure you get a copy. Until then use the existing form in the medium with which you are most comfortable. I can also be reached on CTS and will soon be on the network as well.

In order to improve the scanning model, we will periodically request an evaluation of the process. We ask that you help us in this endeavor by filling out and returning the evaluations. **Attached is an evaluation related to last Friday's workshop. Please take a few minutes to reflect on the session and return the form to me.**

If you have any additional questions, concerns or suggestions please feel free to call me at anytime during the course of the scan. It is our belief that through environmental scanning we can take charge of the future. We are excited about the project and whole-heartedly thank you again for your involvement and support.

Environmental Scanning for Occupational Education
Kick-Off Evaluation

In order that we may improve the content and delivery of the Kick-Off Event we ask that you evaluate the following areas. With the use of the following scale, please rate the statements below.

1 - *Agree* 2 - *Somewhat Agree* 3 - *Neither Agree or Disagree*

4 - *Somewhat Disagree* 5 - *Disagree*

A. Topic Relevance

_____1. The presenters were knowledgeable about the topic.

_____2. The goals of the presentation were clearly evident.

_____3. The information given was current valuable and useful.

_____4. Examples and illustrations used help to clarify the topic.

B. Organization and Planning

_____5. It was evident that the presentation was organized and well prepared.

_____6. Material was presented in a systematic manner.

_____7. Handouts were of good quality and useful.

_____8. Audio-visual aids were of good quality and added to the overall presentation.

C. Group Interaction

_____9. My questions about the topic were readily answered.

_____10. The presenters encouraged adequate group interaction.

D. Physical Facilities and Logistics

_____11. The environment was conducive to learning.

_____12. Food and refreshments were satisfactory.

_____13. Break times were adequate.

_____14. The time allotted for the presentation was adequate.

E. Understanding

_____15. I feel comfortable with the process of scanning and abstracting information.

Comments:
Please place additional comments on the back of the form - THANK YOU.

TO: 1 ~

FROM: Mark P. Champion

DATE: March 3, 1992

SUBJECT: Environmental Scanning Workshop

****

Please find attached:

1. A revised form for abstracting articles.
2. A "Subject list" on the reverse side of the abstracting form to assist in filling out the first blank on the new form.
3. An "Abstract Form Checklist" to assist you in filling out the entire form.

Copy as many of the new Abstract Forms as you think you will need to do abstracts in the hard copy format. The Abstract Form Checklist was created by request to help you to figure out just what should go into each blank. Let me know if it helps.

If you need a new disk please call me at 458-6805. Specify disk size and density and I will get it to you ASAP. If you have any questions please give me a call.

Also, network access (internally) at the college is quickly becoming a reality. If you are interested in directly inputting scan information into the data base contact me as soon as you can. A tentative date for Fox-Pro training has been set for March 10, 1992 at 3:00 pm in the ATC. Call for further details.

Appendix 5: Concept Mapping

CONCEPT MAPPING AS AN ANALYSIS TOOL IN ENVIRONMENTAL SCANNING

CONCEPT MAPPING: A DEFINITION

A process which enables an individual or group to lay out ideas on any topic in a picture or map.

OVERVIEW

One of the major goals of the environmental scanning process is to create a data base of usable information. Creating knowledge from information is one of the primary trends in education. Spending energy on data collection only to send it out for dust collection can be frustrating as well as fruitless. A process is needed which draws on individual and group thought by organizing information to prompt further analysis. The steering committee chose the Concept System software program as a computerized method of concept mapping. The concept map was used to assist the scanning team to focus on the interpretation of the issues important to the future of occupational education.

Webster states that a concept is an "abstract or generic idea generalized from particular instances." In our context it can be said that a concept is a generalization taken from a cluster of particular issues. Using the Concept Systems software, a myriad of diverse issues can be summarized, then graphically represented on a map, lending themselves to further analysis. The process of concept mapping starts by having the individuals in the group sort the issues into logical theme groups then rate each issue as to its likelihood of impact on Occupational Education. Rating and sorting information is entered into the computer, several cluster arrangements are tried, and maps such as those shown in Appendix 8 result. Average ratings for each issue, average ratings for each cluster, and other statistical summaries are also generated.

The program's major advantage is its compilation of sophisticated statistical analysis with user-friendly output, which displays the concepts in a variety of ways. Other advantages include the program's ability to involve the group in a structured, but intuitive, bottom up process which produces the collective thought of participants in a visual medium. Although the maps must be carefully analyzed, the Concept System takes complex data and provides users with understandable information in a relatively short time period.

TIPS FOR USE IN AN ENVIRONMENTAL SCAN

The Concept System software program is IBM compatible and comes with a fairly thorough manual. It is recommended that one person on the steering committee become completely familiar with the program and take the responsibility of inputting the data and creating the map. The first time through this may seem a bit awkward and time consuming. Once you work with the program and familiarize yourself with its features it does get easier. Our second map took much less time to produce than the first.

Our application of the program deserves some explanation. As the scanning team submitted abstracts, they were asked to state the major issue contained in the article. At times an article might contain more than one issue. The project coordinator reviews the issue statements and compiles a list of issues that resulted from the scan. If an issue was duplicated in more than one abstract, the issue statement was used only once. In fact, consolidation of like issues greatly facilitates the process.

It is also important not to have too many issue statements. The maximum capacity of the program is 98 statements. It is recommended for the sake time and clarity that no more than 50-60 statements be used. Fewer statements will leave more time for discussion and also lighten the task of the scanners who must manually sort and rate the issues. Using fewer issue statements also makes the analysis and interpretation of the map easier.

Having a large group of scanners rate and sort the issues is a good way to get them involved with the fruits of the scan. Discussions about the issues among small groups during this process is also desired. At times an issue may surface that is unclear to the group. Clarification of the issue can be readily obtained if the scanner who submitted the abstract is present.

Once the rating and sorting data is collected it is the job of the project coordinator or the group's designee to enter the data and draw the map that will be used for interpretation. Following the example in the manual provided with the software program can be useful the first time around. After that initial experience, one can get a feel for what other options might work best.

Interpretation of the map helps to bring out the relationships between issues. As issues start to cluster in certain areas of the map, common themes arise. Interpreting the

map is best done by a group. Group interaction facilitates discussion and aids in the futuring process by bringing out differing viewpoints. An example of a cluster theme and the issues contained within are shown below. The numbers are ratings reflecting the importance of the cluster/issues to occupational education. Either the full scanning team or the steering committee can involve themselves in the interpretation of the map. Again, a group process is important in a good analysis and tends to foster ownership in the process.

CLUSTER WITH RATING VALUES*

Cluster 3: Employability Skills

24.	Employers stress the importance of employability skills...	(4.00)
90.	Need for student knowledge of job obtainment skills.	(3.00)
34.	Vocational education curriculum steering away from over.	(4.00)
36.	Education must respond rapidly to meet industry's needs...	(4.60)
61.	Threat. Education must emphasize total quality as well...	(4.20)
60.	Changing role of the leader and worker in business whic...	(3.80)
95.	Teamwork skills must be taught, modeled and practiced...	(4.20)
56.	Federal legislation reflects a growing concern with lac...	(3.40)
63.	Minority retention programs in universities are more su...	(3.60)
65.	Women need to be recruited for higher math courses.	(2.80)

Cluster Rating Average = 3.84

* Rating Scale: 1=Least Important to 5=Most Important

ADVANTAGES OF CONCEPT MAPPING

The Concept System:

1. uses highly sophisticated analysis, yet is extremely user friendly;
2. gives a quick method of identifying the group's impressions of the issues;
3. is participant-oriented;
4. is a bottom-up process;
5. is a structured process;
6. is an intuitive process;
7. is a visual process.

"A picture is worth a thousand words."

For further information on The Concept System program write:

Concept Systems
402 Winthrop Drive
Ithaca NY 14850

Appendix 6: Analysis Session Materials

ANALYSIS SESSION ONE
April 1992

TO: 1 ~

FROM: Mark P. Champion

DATE: April 16, 1992

SUBJECT: Environmental Scanning Analysis Session One

****

The first abstracts are in and we are ready to begin analyzing the issues! The analysis session for the Environmental Scanning Project will be held:

April 24, 1992
Multipurpose Room North
Student Center Building
12 noon until 3 p.m.
A buffet lunch will be served.
RSVP by April 22, 1992

Attached is a packet containing materials for use during the analysis session. Please bring this material with you to the meeting. Take a few moments to review the information in the report of the ninety-two abstracted articles. Pay particular attention to the "issues" category. The major focus of Friday's meeting will be to clarify the issues. As you examine the issues use the attached analysis questions to gain insight into the importance of these issues to the School of Occupational Education.

A copy of an article about "Concept Mapping" has been included. This is the major piece of software that will be used to interpret the data we are receiving. Our task in the meeting will be to sort the issues into categories and then rate the importance of each issue.

We look forward to seeing you on Friday. Please call me at 458-6805 if you have any questions.

Enclosures: Agenda
Abstract Report
Concept Mapping Article
Analysis Questions

ENVIRONMENTAL SCANNING
ANALYSIS SESSION

AGENDA-*REVISED*
April 24, 1992

12:00 Noon: Buffet lunch.

12:20 pm: "Winds of Change" - Video Presentation

12:30 pm: Introductions and Opening Comments - Till Peters

12:35 pm: Scanning Project Update - Mark Champion

1. Abstract Report-Newsletter
2. Area Economic and Demographic Data

12:45 pm: Today's Agenda - Mark

12:50 pm: **Issues Clarification** - Lorilee Sandmann and John Mackenzie

1. Form six groups
2. Using the "Title/Issue Report" (Canary) and the "Key Questions for Analysis" sheet (Blue) discuss as many issues as possible.
3. Report on impressions

1:20 pm: Break

1:30 pm: **Sorting and Rating the Issues** - Lorilee, John, Mark

1. Each participant will take a deck of issue cards and "sort" the issues into like groups. Give a name to each group which reflects its theme. Record your findings on the "Sorting Data Sheet" (Yellow)
2. Using the "Rating Sheet" (Pink) and the "Rating Scale" (Green) the participant will "rate" each issue on a scale of 1 to 5 and record the results on their rating sheet.

2:30 pm: Group Comments - Lorilee and John

2:55 pm: Where do we go from here? - Till

1. Continued data collection and analysis
2. Prioritization of the issues
3. Recommendations

KEY QUESTIONS FOR ANALYSIS

Instructions: The first activity is designed to familiarize you with the issues. Use the questions below for each issue listed in the Title/Issue Report (yellow). Discuss the issues as a group. You may start anywhere in the report (beginning, middle, end, or subjects of personal interest) Try to get through as many issues as you can. You can note your impressions on the sheet next to each issue. Your impressions at this time will be used for discussion only.

1. WHAT IS THE PROBABILITY THAT THIS ISSUE WILL IMPACT THE SCHOOL OF OCCUPATIONAL EDUCATION AT GRCC?

2. IS THIS ISSUE LIKELY TO HAVE AN IMPACT IN THE:
   - * NEAR FUTURE - LESS THAN 2 YEARS
   - * * LONG TERM FUTURE - GREATER THAN 2 YEARS

3. WILL THE IMPACT AFFECT THE ENTIRE SCHOOL OF OCCUPATIONAL EDUCATION, A DIVISION, OR AN INDIVIDUAL PROGRAM?

SORTING DATA SHEET

Instructions: Individuallly, take your deck of issue cards and "sort" them into groups that make sense to you. You should see certain themes start to develop. Give a name to each group and then record you findings in the space below according to teh following example.

Example:	Theme Name:	Card Numbers
	Layoffs:	2, 5, 34, 45, 98

RATING SCALE

Instructions: Using the scale below, the participant will rate each issue as to the likelihood that the issue will have an impact on the School of Occupational Education at Grand Rapids Community College. Record your ratings on the "Rating Sheet" (pink).

1 - Relatively Unlikely
2 - Somewhat Likely
3 - Moderately Likely
4 - Very Likely
5 - Extremely Likely

Example: __2__ Increased number of bankruptcy filings are attributed to poor economic conditions and unprecedented build-up of debt by both consumers and businesses.

SCAN ANALYSIS I
RATING SHEET

1) _____ Businesses involved in the child care needs of their employees.

2) _____ Understanding and appreciation of diversity/cultural differences as it applies to how we educate children.

3) _____ Computer viruses pose a serious threat.

4) _____ Multimedia is the direction computer technology is moving.

5) _____ Use of multimedia is expected to grow.

6) _____ Increased use of applied intelligence software which include expert systems and neural network software. A combination of these two types of software is likely in the near future.

7) _____ Changing technology in communications will change communications networks dramatically. Professionals in the computer industry will face a decentralized distributed data processing environment.

8) _____ Computing curricula needs to stay current and will require constant faculty updates.

9) _____ Introduction of new technologies may adversely effect productivity in manufacturing industries.

10) _____ New technology is not always what it's cracked up to be.

11) _____ The decentralization of computing continues in large organizations with great reliance on LANS and Wide Area Networks.

12) _____ The computer and accompanying technology should be used as a tool by all teachers and students.

13) _____ Hyerpermedia/Toolbook training available for educators.

14) _____ Because of the high price tag, purchasing of multimedia delivery systems should come after much planning by users and designers.

15) _____ Multimedia's role in education will change the educator's role from disseminating knowledge to creating knowledge from information.

16) _____ While no GR area GM plants are listed for closing, ripple effects (layoffs/plant closings) will be felt by GM suppliers in W. MI.

17) _____ New technology and automation will cause layoffs and industry closings as the computer replaces humans in the workforce.

18) _____ Improving economy reflected in an increase in manufacturing activity and construction spending is consistent with recovery.

19) _____ U.S. businesses are doing well in the global marketplace which is creating increased opportunity for large and small businesses.

20) _____ Manufacturing jobs are declining in the State of Michigan.

21) _____ More people w/ manuf. backgrounds are starting their own businesses.

22) _____ Growth in air transport industry in Kent County.

23) _____ Possible relocation/reassignment for major W. MI employer (2300 employees) which is tied to the auto industry.

24) _____ Employers stress the importance of employability skills in addition to technical skills for all employees.

25) _____ Increased number of bankruptcy filings are attributed to poor economic conditions and unprecedented build-up of debt by both consumers and businesses.

26) _____ Grand Rapids is growing in new job creation in spite of a recession. The upward trend has been ongoing.

27) _____ The rate of growth in the U.S. economy will be slower in the future than it has in the past.

28) _____ Instability in the technology market.

29) _____ A low number of general education courses are being taught at the community colleges. Not enough follow-up courses which focus on the depth of learning in a subject beyond introductory courses.

30) _____ Family values are the key to success in the education of children.

31) _____ Low math and science scores in the U.S., a reflection of much needed educational reforms.

32) _____ Laid of workers seek retraining. Hope for new jobs after more ed.

33) _____ Laid off workers seek retraining which will lead to new jobs.

34) _____ Vocational education curriculum steering away from overemphasis on technical content and psychomotor skills and toward behaviors, values, and affective skills.

35) _____ State Voc Ed Curriculum puts emphasis on partnering with B and I, and on articulation of education programs among all levels.

36) _____ Education must respond rapidly to meet industry's needs for employees that have an emphasis on continuous improvement (affective domain skills), as well as cognitive and psychomotor skills for the current and future workforce.

37) _____ Tech Prep-one of the hottest topics on the national ed. agenda.

38) _____ U.S. must get international market share of the fashion merchandising industry to survive.

39) _____ Retailers need to know and understand how values and attitudes toward fashion affect their customers' decisions about apparel purchases.

40) _____ Profitable stores are actively involved with customers.

41) _____ Lack of standardized sizing (clothing) is indicative of the problems which may arise with foreign manufacturing markets. Advanced technology may lead to standardization of sizing.

42) _____ More training needed for students in the field of mental health. Opportunity.

43) _____ The use of computer-based interactive video is aiding in the training of health care workers. Opportunity.

44) _____ Communication improvement for aphasic population.

45) _____ Crises in nursing and health care requires student instruction in status, power, economics, and numbers.

46) _____ Expansion possibilities for smaller area hospital to include new outpatient services.

47) _____ Wellness programs are being perceived as a method for decreasing health care costs. State funding is available in some cases.

48) _____ Expansion of Ferris BSN completion program to Muskegon CC.

49) _____ Opportunity - Awareness of the effect that all recycling has.

50) _____ Growth in the food service industry gives an opportunity for increased training of qualified workforce.

51) _____ Recycling and waste reduction is needed on a larger scale.

52) _____ Decline in the area tool and die industry due to auto industry decline. Threat.

53) _____ Increased role of the county in area projects.

54) _____ Increases Voc Ed funding would increase opportunities for Tech Prep and Voc Ed expansion.

55) _____ Threat: The likelihood of another hold-the-line budget for Voc Ed is increased.

56) _____ Federal legislation reflects a growing concern with lack of U.S. school-to-work transition policy.

57) _____ The American Disabilities Act(ADA) is opening doors for disabled individuals which will have wide ranging implications for small and large businesses/institutions.

58) _____ Layoffs/declining auto industry, may cause increased pressure for Economic Development funding.

59) _____ Government must do more with less. The public sector must be more responsive to its customers with less resources.

60) _____ Changing role of the leader and worker in busineas which reflects education's importance in the workplace at all levels.

61) _____ Threat. Education must emphasize total quality as well as specialized skills.

62) _____ Managerial skills needed by educators.

63) _____ Minority retention programs in universities are more successful if operated by individual academic departments rather than by the university student services function.

64) _____ Education may be key to preventing infant deaths.

65) _____ Women need to be recruited for higher math courses.

66) _____ Increase. number of HIV positive individuals in the classroom and workplace.

67) _____ Michigan technology companies are in electronics and education. Diversity in areas other than auto is a must.

68) _____ The image of technology graduates from Michigan Institutions could be improved.

69) _____ Books on computer may be an opportunity for text materials to be placed in an electronic medium.

70) _____ Wireless networks may change the computer network structure.

71) _____ Diversification: attention to out of state customers. Attention to non-auto customers.

72) _____ Need for a well-educated workforce.

73) _____ Increased/continued interest in Resource Recovery Management.

74) _____ Artificial intelligence is being used to develop smart computers.

75) _____ New technology is changing the way we read.

76) _____ Technology will not only change how we teach, but what we teach.

77) _____ Video communication's improvements due to fiber-optic technology.

78) _____ Businesses are cooperating with each other in order to compete.

79) _____ Business/Education partnerships are essential for true information exchange and for funding of new technologies.

80) _____ Use of technology by ordinary people.

81) _____ Marriage of computers and electronics will spawn everything from smart TVs to portable secretaries and change how you live and work.

82) _____ Competition for crash modeling software.

83) _____ Connectivity of computer networks and the need for sharing data across networks.

84) _____ Pen type input may not become common. At least not yet because computers can only read checkmarks, not handwriting.

85) _____ Peer computer networking--connecting users as equals, rather that all "off" a server, is increasing.

86) _____ Flexible automated systems are being used to reduce manuf. costs.

87) _____ Increasing use of welding technology within the CIM environment.

88) _____ Repetitive injuries are likely to become more commonplace as more and more automation and computerization occurs.

89) _____ To stay competitive, more firms will adapt TQM, CI, Team structures, etc.

90) _____ Need for student knowledge of job obtainment skills.

91) _____ The trend in companies of all sizes is toward a democratic, caring workplace and away from a bureaucratic, distant management.

92) _____ Area layoffs due to cuts in military spending.

93) _____ Companies dealing w/ national defense contracts continue to lose business.

94) _____ TQM is a must, but innovation and anticipation are essential to success. The ability to identify and use new paradigms will be an essential skill needed to be innovative and anticipatory.

95) _____ Teamwork skills must be taught, modeled and practiced.

96) _____ Computer-based training - private sector is being used for training of employees at area business. Threat/Opportunity?

97) _____ Job training/employment access for the developmentally disabled.

98) _____ On-site business classes at area businesses offered by another community college. Major opportunity.

Environmental Scanning for Occupational Education
Analysis Session 1

Evaluation: In order that we may improve the effectiveness of each analysis sesion we ask that you evaluate the following areas. With the use of the following scale, please rate the statements below.
1 - *Agree* **2** - *Somewhat Agree* **3** - *Neither Agree or Disagree* **4** - *Somewhat Disagree* **5** - *Disagree*

A. Content Relevance

_____1. The presenters were knowledgeable about the topic.

_____2. The goals of the presentation were clearly evident.

_____3. The information given was current valuable and useful.

_____4. Examples and illustrations used, help to clarify the topic.

B. Organization and Planning

_____5. It was evident that the presentation was organized and well prepared.
_____6. Material was presented in a systematic manner.

_____7. Handouts were of good quality and useful.

_____8. Audio-visual aids were of good quality and added to the overall presentation.

C. Group Interaction

_____9. My questions about the topic were readily answered.

_____10. The presenters encouraged adequate group interaction.

D. Physical Facilities and Logistics

_____11. The environment was conducive to learning.

_____12. Food and refreshments were satisfactory.

_____13. Break times were adequate.

_____14. The time alloted for the presentation was adequate.

E. Understanding

_____15. I feel comfortable with the process of scanning and abstracting information.

_____16. I have a good understanding of the initial analysis of scanned data.

Comments:

Please place additional comments on the back of the form - THANK YOU.

Environmental Scanning for Occupational Education
Analysis Session 1

Evaluation Report: A frequency distribution expressed in percentage is recorded below each question. Means are shown based on the following rating scale

1 - *Agree* 2 - *Somewhat Agree* 3 - *Neither Agree or Disagree*
4 - *Somewhat Disagree* 5 - *Disagree*

A. Content Relevance

Mean

1.13 1. The presenters were knowledgeable about the topic.
FD: 1= 86.7% 2 = 13.3%

1.27 2. The goals of the presentation were clearly evident.
FD: 1 = 73.3% 2 = 26.7%

1.40 3. The information given was current valuable and useful.
FD: 1 = 73.3% 2 = 13.3% 3 = 13.3%

1.40 4. Examples and illustrations used, help to clarify the topic.
FD: 1 = 60% 2 = 40%

B. Organization and Planning

Mean

1.27 5. It was evident that the presentation was organized and well prepared.
FD: 1 = 73.3% 2 = 26.7%

1.13 6. Material was presented in a systematic manner.
FD: 1 = 86.7% 2 = 13.3%

1.20 7. Handouts were of good quality and useful.
FD: 1 = 80% 2 = 20%

1.33 8. Audio-visual aids were of good quality and added to the overall presentation.
FD: 1 = 73.3% 2 = 20% 3 = 6.7%

C. Group Interaction

Mean

1.27 9. My questions about the topic were readily answered.
FD: 1 = 73.3% 2 = 26.7%

1.07 10. The presenters encouraged adequate group interaction.
FD: 1 = 93.3% 2 = 6.7%

D. **Physical Facilities and Logistics**

Mean

1.60 11. The environment was conducive to learning.
FD: 1 = 60% 2 = 26.7% 3 = 6.7% 4 = 6.7%

1.00 12. Food and refreshments were satisfactory.
FD: 1 = 100%

1.27 13. Break times were adequate.
FD: 1 = 80% 2 = 13.3% 3 = 6.7%

1.67 14. The time allotted for the presentation was adequate.
FD: 1 = 53.3% 2 = 33.3% 3 = 6.7% 4 = 6.7%

E. **Understanding**

Mean

1.60 15. I feel comfortable with the process of scanning and abstracting information.
FD: 1 = 46.7% 2 = 46.7% 3 = 6.7%

1.73 16. I have a good understanding of the initial analysis of scanned data.
FD: 1 = 26.7% 2 = 73.3%

Comments:

1. Not enough time for task and more in depth discussion (1)
2. ...but too much talking (external noise in next room and among steer committee was distracting (11)
3. Needed a bit more time (14)
4. Good session - very helpful in increasing my understanding of the process; my participation is positive and a good experience (Comments)
5. Reversal of rating scales (7)
6. Noisy from group next door (11)
7. Too much background noise during sorting and rating (11)
8. noisy(11)
9. I feel more comfortable after today (15)
10. Could have used more (time) but then if there were more probably wouldn't have used it effectively (14)
11. Good job, Mark
12. A little more time needed or a little less to accomplish (Comments)

Please place additional comments on the back of the form - THANK YOU.

TO: 1~

FROM: Mark P. Champion

DATE: April 28, 1992

SUBJECT: Environmental Scanning Analysis Session One

****

Thank you for attending last Friday's analysis session. The activities in which you participated mark the first step in making sense of the information you are providing. You are the forerunners of an important trend, creating knowledge from information.

I would like to remind you of the importance of continued abstracting. It is at the heart of this process. We are looking in particular for abstracts that are local (Kent-Ottawa counties) in nature. Also articles pertaining to health, business and public service are needed to give a clearer picture of the emerging issues in these areas. Abstracting outside of your area of interest, as Ruth suggested is a way of giving fresh perspectives to various issues.

Call me at 458-6805 if you have questions or need scan forms. If you identify anyone that would like to "scan" for the project I would be happy to explain the process to them.

Thank you very much for your continued support.

TO:

FROM: Mark P. Champion

DATE: April 28, 1992

SUBJECT: Environmental Scanning Analysis Session One

****

We're sorry you could not be with us for last Friday's analysis session. The group had some good discussion and participated in a key step for the initial analysis of the abstracts received.

Enclosed are the materials from the session including an update of the agenda. I am asking that you help us out by doing two of the activities that the scanning team did at the session.

Please read through the materials and follow the instructions for sorting (yellow sheet) and rating (mint green sheet) the issues. Use the gold issue cards to sort the issues into theme groups. Give any name of your choice for each group. Record your results on the yellow sheet in the format shown. Next read through each issue on the rating sheet (pink) and record your rating. Return the yellow and pink sheets and the cards (if you have no further use for them) to my mail box in the information center.

The entire process should take you no more than an hour. Your assistance in this effort will help us to develop a Concept Map that will accurately reflect the entire group's ideas about the issues. Call me at 458-6805 if you need further instructions. If you feel you can not do this for us, please return the cards and the sorting/rating sheets to the above location.

Thank you very much for your continued support.

Enclosures: Agenda-Revised
"Scanotes" Newsletter
Sorting/Rating data sheets and instructions
98 issue cards

ANALYSIS SESSION TWO
August 1992

The second round of analysis also used the concept map, but because it was difficult to hold an session during the summer, a slightly different method was used. Rather than having the entire scanning team sort and rate the issue, this task was performed by the steering Committee and several volunteers from the scanning team. The sorting and rating was done without the benefit of a meeting. The process was familiar to all of those who participated and communication was acheived informally. The data was returned to the Project Coordinator for input and analysis.

SORTING DATA SHEET

Instructions: Individuallly, take your deck of issue cards and "sort" them into groups that make sense to you. You should see certain themes start to develop. Give a name to each group and then record you findings in the space below according to teh following example.

Example:	Theme Name:	Card Numbers
	Layoffs:	2, 5, 34, 45, 98

RATING SCALE

Instructions: Using the scale below, the participant will rate each issue as to the likelihood that the issue will have an impact on the School of Occupational Education at Grand Rapids Community College. Record your ratings on the "Rating Sheet" (pink).

1 - Relatively Unlikely
2 - Somewhat Likely
3 - Moderately Likely
4 - Very Likely
5 - Extremely Likely

Example: __2__ Increased number of bankruptcy filings are attributed to poor economic conditions and unprecedented build-up of debt by both consumers and businesses.

ENVIRONMENTAL SCAN ANALYSIS 2
ISSUES RATING SHEET

1) ____ The need for the use of fiberoptics in networks is important today and imperative for the future.
2) ____ New programs will be required to meet the needs of the developmentally disabled.
3) ____ Area manufacturers and businesses go after the global market by forming joint ventures with overseas firms.
4) ____ A growing realization that the investment in early childhood education and parenting skills training will be very effective - both in dollars and results.
5) ____ Skills in Self-Control management are needed by early childhood/child care staff.
6) ____ More substance impacted children will be entering the school system and teachers and childcare workers will need proper training to deal with such a population.
7) ____ Computers and technology will play a major role in restructuring education.
8) ____ Technology and educational reform linked together.
9) ____ School district/college service area geography is changing. Boundaries no longer exist.
10) ____ New technologies must be included in educational restructuring.
11) ____ Even with the increasing availability of computers, fears about using computers still abound and should be recognized.
12) ____ A college education is the single most important factor in facilitating favorable economic transitions and avoiding unfavorable ones.
13) ____ Workforce 2000 predictions (85% of entrants into the workforce will be women and minorities) is acted upon aggressively by Prudential Insurance Company.
14) ____ An aging MI population may be a threat to the state's economic base which in turn could have adverse effects on education, the poor, and health.
15) ____ Coordinated economic development efforts in Kent County should include the involvement of Occupational Education at GRCC.
16) ____ Hospitals explore ways to provide health care funding for the poor.
17) ____ A slower but deliberate growth in employment will take place in the GR area due to a rebound in the furniture industry. (U of M Forecast)
18) ____ A growth policy for the 90's that would assist in meeting the global competition facing America. Would such a policy help or hinder?
19) ____ Community college involved in assisting companies find business overseas. CC's actively promoting global markets.
20) ____ The use of participative management and worker education key to manufacturer's turn around.
21) ____ Occupational projections to 2000 show declining manufacturing jobs with an increase in the service producing sector of the economy.
22) ____ Improved earnings in area manufacturers point to economic recovery.
23) ____ Improving economic picture indicated by increase in construction permits.
24) ____ Entrepreneurial opportunities for disabled supported by legislation.
25) ____ Press recommends converting funds used for defense into funds used for retraining of workers displaced by the downsizing of defense spending.
26) ____ Diversification into global market for auto parts manufacturer-Cascade Engineering forms Escade.
27) ____ Furniture industry must target new markets: global and small business in order to grow and survive.
28) ____ GR area showing short term economic growth-gradual recovery.
29) ____ Recovery of sales-Improving demand for W. MI products/services.

30) ____ Area economy will grow slower in the next decade due to a decline in the auto industry and slower growth in the furniture industry.

31) ____ American education has set up a curriculum that does not expect all students to learn. We doom many students to failure by not expecting them to learn.

32) ____ Multilingual ability is one key to attracting foreign businesses and American businesses with foreign interests.

33) ____ All colleges must monitor and anticipate the future for education. A paradigm shift is in the making.

34) ____ Increasing number of foreign students on American campuses.

35) ____ As K-12 institutions begin to change, students will expect the postsecondary institutions to provide more innovative life-role learning experiences.

36) ____ Reported decline in number and quality (fewer high level courses) of general ed courses being offered at MI's community colleges.

37) ____ Public and governmental demand for much stronger accountability by both individual higher ed. institutions and their accreditors.

38) ____ Employers see lack of grammar, spelling and punctuation skills as a key reason for declining employment for an applicant.

39) ____ Ethnic Studies programs/curricula is an essential ingredient to liberal arts curricula.

40) ____ Training is available to better oneself.

41) ____ Unless action is taken on several fronts (State, policymakers, the colleges, the practitioners) customized training needs of industry will not be met--in spite of the fact that the community colleges have the technical expertise and the delivery system to do so.

42) ____ Employers stressing Basic technical (electricity and electronics) skills and basic education skills (english, math). Interpersonal and Problem Solving were also stressed.

43) ____ Short term training courses in fiberoptics and robotics are needed to upgrade those working in Electricity and Electronics.

44) ____ Regional Effort by Great Lakes States to create markets for recycled products.

45) ____ Evidence of area hospitals trying collaboration instead of competition in providing needed services.

46) ____ Health care costs threaten to bankrupt businesses-consumer awareness needed in health care.

47) ____ Area hospital to seek Neonatal Intensive Care expansion without community support.

48) ____ Increasing need for daycare and respite care for older adults.

49) ____ Proposed US health care reforms to include National Health Care and Rationing of medical resources.

50) ____ Occupational Therapy educational programs for certified occupational therapy assistants and registered occupational therapists need to be enlarged to meet the demand for therapists.

51) ____ Occupational Therapy Assistants are called to become involved in the TQM/CQI movement.

52) ____ Funding available from the federal government for the development to eldercare programs/Models.

53) ____ Salary, national job availability, regular hours, prestige are reasons students choose the occupational therapy profession.

54) ____ More Occupational Therapists are needed nationwide.

55) ____ Dept of Commerce and Labor program to aid small manufacturers with new technology and upgrading workers skills. Emphasis on SMALL manufacturing.

56) ____ National Center for Manufacturing Sciences-Ann Arbor seeks to hasten the development of technology and reduce expenses by spreading costs among several companies that cooperate on generic research by still compete to create new products. (Cooperative Manufacturing Research)

57) ____ Growth of higher education and health care in downtown area-Recommendation for the "Voices and Visions" Project-Downtown Development Authority.

58) ____ Increased interinstitutional collaboration-Recommendation for the "Voices and Visions" Project-Downtown Development Authority.

59) ____ Recognition of a 2-pronged market: office workers and conventioneers [students, educational workers and medical workers are conspicuous in their omission!]-Recommendation for the "Voices and Visions" Project-Downtown Development Authority.

60) ____ Increasing cooperation between governmental and nongovernmental entities.

61) ____ Government mandates vs. incentives to create a market for recycled materials.

62) ____ Appropriation of $35 MM for 92-93 for workforce training and retraining available by competitive grant. Inadequate attempt to address the problem.

63) ____ Enrollment for community colleges increasing annually.

64) ____ State Aid revenue for community colleges decreasing both in real and constant dollars.

65) ____ Tuition charges for community colleges increasing.

66) ____ An opportunity exists for the Business Division to redesign its curriculum to reflect the changing business community and management approaches currently used.

67) ____ Technology can replace continuous labor by cost of single machine.

68) ____ CD-ROM and multimedia attachments for computers are being widely used.

69) ____ Opportunity to refocus some of the current manufacturing classes to emphasize process technology.

70) ____ Improving Education/Business relationships which improve the chances of integrating new technological methods into area small/med sized companies.

71) ____ Modernization of area communications through fiberoptics.

72) ____ Legislative moves to regulate caller ID which displays the callers number at the receivers end. Potential misuse of technology.

73) ____ Postal service envisions the use of optical-scanners and artificial intelligence in deciphering handwriting and sorting mail.

74) ____ Interactive TV becoming commercialized.

75) ____ Training in aviation field will be needed due to decline in military training.

76) ____ American Disabilities act will have wide ranging effects on all sectors of the population.

77) ____ Older adults need jobs and the appropriate training for those jobs.

78) ____ First ever strike for Rapistan Demag a German owned Co.

79) ____ Collaboration and cooperation in quality standards between office furniture suppliers and manufacturers.

80) ____ Wages will not rise as fast in the future because employers are putting the money into benefits.

81) ____ Women's workforce issues-continued need to address.

82) ____ Computer costs are dropping and computer budgets are still rising while white collar productivity is anemic. Computers can't take the place of good management, but they can help if processes are reengineered first.

To: Don Boyer, Ray Hoag, John Mackenzie, Juan Olivarez, Linda Peters, Till Peters, Lorilee Sandmann, Bobbi Schrader, Michael Spurgin, Paula Stark

From: Mark Champion

Date: August 3, 1992

Topic: Second Concept Map-Preliminary Results

****

Attached are the initial results of the second concept map based on the issues submitted by the "scanners" since the last analysis session in April.

The following information is included:

1. A complete listing of the 82 issues sorted and rated by 10 individuals. Since the issues in the bridging and rating reports are not complete it serves as a quick reference.

2. A map reflecting the bridging values graphically along with a list of the issues within each cluster. Each issue has a bridging value and each cluster has an average bridging value. The lower the bridging value the more frequently the issue was sorted with other issues in the cluster.

3. A rating map graphically depicting the importance of each cluster relative to its impact on occupational education. The higher the cluster wall the more likely the issues within were seen as having an impact on occupational education. The ratings of the individual statements and the cluster average is also included.

Suggestions for cluster names can be faxed to me at 458-6665. The clusters will be named and a preliminary report will be included in the next edition of ***SCANOTES*** which will come out early next week.

Thank you for your assistance in rating and sorting the issues. Call me at 458-6805 if you have any questions about the map.

To: Ray Hoag, John Mackenzie, Juan Olivarez, Till Peters, Lorilee Sandmann, Paula Stark

From: Mark Champion

Date: August 12, 1992

Topic: Second Concept Map-23 Cluster Solution and Final Report Draft

****

Attached are some materials for Wednesday's meeting (3pm-5pm, ATC).

The following information is included:

1. A reworking of the map into 23 clusters. Note that some clusters only have one issue. This happens when an issue is totally unrelated to the other issues in the cluster. The program will sort it into its own cluster. Use the complete listing of the 82 issues that you received with the last map to see the complete statement in each cluster.

2. A draft of the Second Concept Map Final Report. We will need to get this out promptly so it can be used at the analysis session on September 29. If you can jot down some trend statements and indicators as well as any comments about cluster names (they are not written in stone) it will help to facilitate our discussion and aid in the completion of the report.

3. Also Earline Moore from the library will be joining us on Wednesday. She will be there to find out more about the library's role in the project.

Thank you for your assistance. Call me at 458-6805 if you have any questions.

ANALYSIS SESSION THREE
September 1992

AGENDA
ENVIRONMENTAL SCANNING
ANALYSIS SESSION

September 29, 1992
12:00 noon until 3:00 pm
Applied Technology Center
Room 118

12:00 noon: Buffet Lunch

12:30 pm: Opening remarks and introductions-Till Peters
Overview of the Process to Date-Mark Champion
Institutionalization of the environmental scanning process-Juan Olivarez

12:45 pm: Overview of Today's activities-Mark Champion

Purpose: Explore and discuss the issues obtained by scanning.

Reduce the number of issues by selecting the ones most likely to impact the School of Occupational Education at GRCC.

Technique: Multivoting

Outcome: The 15 issues most likely to impact the School of Occupational Education at GRCC.

1:00 pm: Discussing and Combining Issues-Rm 219

1:45 pm: Multivoting Process: Narrowing down the number of issues.

2:30 pm: Top 15 Issues Distributed-Discussion

2:40 pm: Where do we go from here?

1. Delphi Survey of community leaders and outside faculty experts-Lorilee Sandmann

2. Analysis Session: November 20-Till Peters
   a. Results of the Delphi
   b. Drafting recommendations

MULTIVOTING PROCEDURE

Multivoting is a way to conduct a straw poll to select the most important items from any list. In our case we will be using the list of issues generated from the past two concept maps. Multivoting is accomplished through a series of votes, each cutting the list in half--even a list of 30 to 50 items can be reduced to a workable number in 4 or 5 votes. Multivoting will help us sort the critical issues impacting occupational education from those that are not so critical.

At the session the issues will be projected using the computer and an overhead projector. The operator will then be able to make the changes in the list as the multivoting proceeds. The end product will be a list of the 15 issues most likely to impact the School of Occupational Education at GRCC. These 15 key issues will be distributed to you at the end of the session.

The Steps:

1. **Examine the list of issues.** Are there any that could be combined? **Through discussion and group agreement combine those issues which seem to be duplicated.**

2. The issues are combined by the computer operator and a new list of issues is generated.

3. **Examine the new list of issues. Choose 16 issues which you feel will have the greatest impact on occupational education.**

4. The group facilitator will go through the issue list asking for a show of hands indicating whether you have chosen that particular issue. **Cast one vote for each issue you have selected.** The computer operator will enter the total number of votes for each issue.

5. The computer operator will sort the issues so that the items having the greatest number of votes will be listed in descending order. Any issue with fewer than 4 votes will be eliminated.

6. After the first elimination round, a new issue list will be generated. **Examine the issues and select one-third of the remaining issues which you feel are most likely to have an impact on occupational education.**

7. **Steps 4 through 6 will be repeated** until a list of the 15 issues most likely to have an impact on occupational education emerges.

8. The final list of issues is distributed.

ISSUES IMPACTING THE SCHOOL OF OCCUPATIONAL EDUCATION AT GRCC

Key words appearing on the screen are highlighted and enlarged below.

1 The impact of job **lay-offs** and **tech**nological **changes** on the need for **training** and retraining the workforce.

2 As the **workforce ages**, older workers will need **retraining** to meet the needs of industry.

3 The level of **interest in** employers and government in the **quality** and level of training of the **workforce**

4 A **decrease** in public **funding** continues to **threaten** customized **training** despite the ability of the community colleges to meet industry's need.

5 **C**ommunity **c**olleges must be able to **anticipate** the future.

6 **C**ommunity **c**ollege's must serve **more students** with **less** governmental financial **(money)** support.

7 As **reforms** take place in the **K-12 ed., students** coming to the **C**ommunity **C**ollege will have **different needs.**

8 **College** level **skills** are increasingly **necessary** to guarantee **employment.**

9 The **impact** of **multimedia** technology on overall **instruction** in the **C**ommunity **C**ollege

10 **Courses** that teach **emerging tech**nologies will be increasingly in **demand** by **busi**ness and industry.

11 Computers and other **technologi**cal innovations must play a **major role** in **ed**ucational restructuring **(reform).**

12 The impact of the change from **mainframe technology to microcomputer based networks**

13 The **health risks** involved with using **new technology**

14 **Technology** will continue to **replace** much **manual labor.**

15 The use of **Artificial Intelligence** (AI) used in microcomputer based **networks**

16 The impact of **fiber optic networks** on **video** and **data comm**unications

17 **Fiberoptic networks** and other systems are being introduced in **increasing** numbers.

18 **CD-ROM** and **multimedia** computer applications will **become commonplace.**

19 The **negative impact** of new **tech**nology on the **workforce**

20 The **increase**d number of **HIV positive** individuals in the **classroom** and **workforce**

21 The number of **women** in the **workforce** will bring **issues** to the surface related to pay equity and entrance into nontraditional occupations.

22 The majority of people entering **(entrants)** the **workforce** will be ethnic **minorities** and **women.**

23 A major **downtown market** consists of office **workers** and **conventioneers.**

24 The **impact of layoffs** in area **auto** and **defense manuf**acturers

25 The **downsizing** of **large manufacturers**

26 As **large manufacturers downsize, smaller** companies will **emerge** as the mainstay of manufacturing.

27 **Area manufac. employment** will continue to **decrease thru** the year **2000.**

28 Tapping **global markets** is the **key to** the **success** of **US manuf**acturing.

29 A **U.S. policy** to confront the **global competition** facing American businesses should be **developed.**

30 **Employers** continue to **demand** that **employee**s have **basic** English and math **skills.**

31 **Employers demand basic skills** and **problem-solving** abilities for electricity and electronics students.

32 The **economic recovery** in terms of **job creation** and **retention**

33 **G**rand **R**apids **area econ**omic **recovery** will be **slow** but **steady.**

34 The School of **Occupational Ed.** should be **involved in** the service area's **economic development** efforts.

35 **Curric**ular **change**s are needed in education in order to **respond to** rapidly changing **busi**ness, industrial, and economic **needs.**

36 **Curric**ular **change**s in **busi**ness programs will be needed to **respond to** changes in the **manage**ment **styles** of employers.

37 The **impact** of the **quality movement on busi**ness, industry and **ed**ucation

38 **Public** and governmental entities will accelerate their **demands** that **higher ed**ucation be **accountable.**

39 **Participatory manage**ment and **ed**ucation are **key to success**ful businesses.

40 The **emphasis** on the customer and **customer satisfaction** in **business** and industry

41 **Collaboration** on the use **of resources** among government, education, health care, and business and industry.

42 The **interdependence of firms** on each other and **governmenta**l agencies

43 The **impact** of the **American Disabilities Act**

44 The **Americans with Disabilities Act** (ADA) will have **wide ranging effects** on all sectors of the population.

45 **Emerging job markets** in the **health industry**

46 The **public need** for **health education**

47 **Higher ed**ucation and **health care** will be **important (to)** parts of the downtown **G**rand **R**apids **econ**omy.

48 **Hospitals** seek **a**lternative health **care** options for the **poor**.

49 Employee **health care costs threaten** the fiscal **viability** of **employer**s.

50 **Demand** for **occ**upational **therapists** and occupational therapy assistants will require the **expansion** of established **programs** and possibly the start of some **new** ones.

51 The **implementation** of **wellness program.**

52 **Business-provided child care** for employees

53 **Substance-impacted childr**en will be **enter**ing the **ed**ucational **syst**em.

54 **Fed**eral **money** will continue to be come **available** for the development of **eldercare** programs.

55 The **need** for **elderly** day **care** and **respite care.**

56 The **need** for more **emphasis on recycling** and waste reduction

57 **Markets** product ideas are **needed for recycled materials.**

THE FIFTEEN ISSUES MOST LIKELY TO IMPACT THE SCHOOL OF OCCUPATIONAL EDUCATION AT GRCC
(The result of the multivoting process)

ISSUE #1

Changes in the workplace (layoffs, technological replacement of workers, downsizing of large manufacturers) are requiring technology and other training and retraining.

ISSUE #2

Increased demands by the public to ensure basic academic skills and problem solving abilities among students leaving higher education programs.

ISSUE #3

GRCC School of Occupational Education could enhance the economic recovery of the Grand Rapids metropolitan area in terms of job creation and retention.

ISSUE #4

Increased minority and female participation in the workforce will demand issues of child care, pay equity and non traditional job opportunities to be seriously addressed.

ISSUE #5

Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.

ISSUE #6

a. Courses that teach emerging technologies will be increasingly in demand by business and industry.
b. Computers and other technological innovations must play a major role in educational reform.

ISSUE #7

The increased level of interest of employers and government in the quality and level of training of the workforce.

ISSUE #8

Emphasis on participatory management, customer satisfaction, and education are key to successful businesses.

ISSUE #9

U.S. policy and programs will be ever increasingly affected by global markets.

ISSUE #10

The impact of multimedia technology on overall instruction in the community college.

ISSUE #11

Emerging job markets in the health industry.

ISSUE #12

As reforms take place in the K-12 education, students coming to the community college will have different needs.

ISSUE #13

Students with disabilities will be a larger share of the student population, significantly impacting education and other systems in light of their protection under the ADA (Americans with Disabilities Act).

ISSUE #14

Community colleges must be able to anticipate the future.

ISSUE #15

Health care costs and educational opportunities to meet the demands of the community will be important to the greater Grand Rapids economy.

REMAINING ISSUES

41. Collaboration on the use of resources among government, education, health care, and business and industry.
42. The interdependence of firms on each other and governmental agencies
56. The need for more emphasis on recycling and waste reduction
57. Markets product ideas are needed for recycled materials.
16. The impact of fiber optic networks on video and data communications
17. Fiber optic networks and other systems are being introduced in increasing numbers.
4. A decrease in public funding continues to threaten customized training despite the ability of the community colleges to meet industry's need.
6. Community college's must serve more students with less governmental financial (money) support.
54. Federal money will continue to be come available for the development of eldercare programs.
55. The need for elderly day care and respite care.
15. The use of Artificial Intelligence (AI) used in microcomputer based networks
13. The health risks involved with using new technology
23. A major downtown market consists of office workers and conventioneers.

Environmental Scanning for Occupational Education-Analysis Session 2

Evaluation: In order that we may improve the effectiveness of each analysis session we ask that you evaluate the following areas. With the use of the scale below, please rate the statements.

1 - *Agree* **2** - Somewhat Agree **3** - *Neither Agree or Disagree* **4** - Somewhat Disagree **5** - *Disagree*

A. Content Relevance

____1. The presenters were knowledgeable about the planned activity.

____2. The goals of the activity were clearly evident.

____3. The activity was current valuable and useful.

____4. Examples and illustrations used, help to clarify the activity.

B. Organization and Planning

____5. It was evident that the presentation was organized and well prepared.

____6. Material was presented in a systematic manner.

____7. Handouts were of good quality and useful.

____8. The computer technology used was of good quality and added to the overall presentation.

C. Group Interaction

____9. My questions about the topic were readily answered.

____10. The presenters encouraged adequate group interaction.

D. Physical Facilities and Logistics

____11. The environment was conducive to learning.

____12. Food and refreshments were satisfactory.

____13. Break times were adequate.

____14. The time allotted for the presentation was adequate.

E. Understanding

____15. I feel comfortable with the multivoting process as used to prioritize the scanning data.

____16. I have a good understanding of environmental scanning and its use in assessing the future needs of occupational education.

Comments:
Please place additional comments on the back of the form - THANK YOU. Please return to Mark Champion.

TO:

FROM: Mark P. Champion

DATE: October 9, 1992

SUBJECT: Environmental Scanning Analysis Session One

****

Thank you for attending Tuesday's analysis session. The expertise and humor you applied to the task at hand added value to the entire analysis session. As a result we now have a list of 15 of the most important issues likely to impact occupational education at GRCC. I have included a list of the fifteen issue groups in order to give you a complete list of the issues that we combined. It will take a little more work to get each group down to one statement.

We will now take your work and construct a delphi survey which will be sent to a panel of community/business leaders and outside faculty experts. The results of the delphi will be collated and returned to you for discussion at the **November 20th** analysis session. The survey results and ensuing discussion will be the basis for the drafting of the recommendations which will be submitted to the Dean of Occupational Education.

Thank you again for making the analysis session worthwhile and fun at the same time. We will see you **November 20th from 12 noon until 3 p.m.**

REMINDER: Join us at "TRENDS" in Traverse City for the Environmental Scanning presentation on Thursday, October 15, at 9:00 a. m. We hope to see you there.

Appendix 7: Newsletters

Appendix 8: Concept Map-Final Reports

During the project four editions of ***SCANOTES***, the newsletter which kept interested stakeholders informed about the project, were produced. In addition, one edition of ***TITLE WAVES***, the publication which compiled the titles in the Grand Rapids Press over a six month period, was also issued. The newsletters used for the project were not reproducible within the manual. If you are interested in obtaining a copy of either of publication, please write:

Mark Champion
Institutional Research
Grand Rapids Community College
143 Bostwick NE
Grand Rapids, MI 49503

Environmental Scanning for Occupational Education
A joint project of
Grand Rapids Community College and Michigan State University

RESULTS OF THE FIRST CONCEPT MAP

Methods: The concept map was developed by using a computer program from Concept Systems. A brief explanation of the process and the map generated can be found on the next page of this report. For a more detailed explanation of the process see ***SCANOTES*** **Vol. 1, No. 2.**

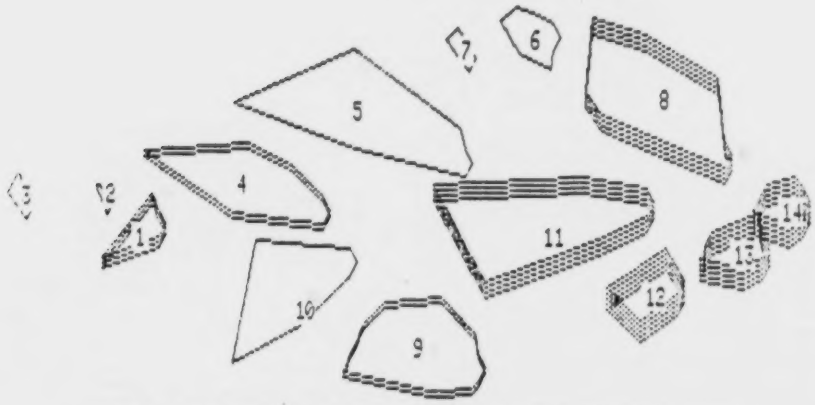
After the map was developed this report was constructed using the following process. First, by discerning the major theme a title was given to each cluster. Next, the major issue or issues were extracted from each cluster and were identified with a short phrase. Each issue phrase was then formed into a statement indicating the direction of the trend. Finally, the committee attempted to identify some measurable indicators for each trend. Some indicators are expressed so that each trend may be monitored through objective data to determine whether it is on the increase, decrease, or remains unchanged. Other indicators can be monitored according to the types of activities occurring in the external environment (i.e. technologies introduced, newly created jobs or job skills, etc.) The clusters are listed in order of their likelihood of impact on occupational education as rated by the participants of the first analysis session. (Clusters 5 and 10 have identical ratings.)

Applications: The data below will be compared and combined with the results of the next concept map. Issues statements taken from recent abstracts are currently being mapped by the steering committee. The entire group of scanners will review the trends emerging from both concept maps at the next analysis session on **September 29, 1992.** At this session scanners will begin to prioritize the trends and discuss their implications for the School of Occupational Education. Immediately following the analysis session a delphi questionnaire will be constructed and sent to community leaders and faculty experts. The purpose of the delphi will be to provide external validation for the trends identified by the scan and to begin to translate those trends into the jobs and job skills which will be needed in the future. The results of the delphi will be discussed at the final analysis session on **November 20, 1992.** At that time recommendations for action will be drafted for final submission to the Dean of Occupational Education.

Endnote: There are several things to remember when interpreting this map. Most important is the fact that this was our first attempt at concept mapping. As in any first attempt there will be some element of trial and error. Environmental scanning remains an art, as well as a science, and as we add to our abstract pool we may be taken in other directions. This brings us to the fact that the map was built on limited data. The type of information coming from additional maps may either reinforce or

conflict with the existing conclusions. In addition, other issues and trends are sure to emerge as we continue to collect data. The final thing to keep in mind is that this is not the only analysis technique that will be used. Several other types of analysis are being planned in order to give the School of Occupational Education a more accurate picture of what may be happening in the future.

RATING CLUSTER MAP



CLUSTER 1 - Social issues & the workforce
CLUSTER 2 - Health care issues & the workforce
CLUSTER 3 - Resource recovery & the environment
CLUSTER 4 - Health care education for jobs & public information
CLUSTER 5 - Adverse effects of technology
CLUSTER 6 - Decentralization of information technology
CLUSTER 7 - Communications technology improving
CLUSTER 8 - Use of multimedia technology in instruction
CLUSTER 9 - Jobs and the economy
CLUSTER 10 - Customer driven organizations /Interagency cooperation
CLUSTER 11 - Quality emphasis in the workplace
CLUSTER 12 - Workforce training & retraining
CLUSTER 13 - Workforce education & employability skills
CLUSTER 14 - Education & curricular change

Technology in the North - Workplace in the South
Education in the East - Health Services in the West

Concept Mapping: Concept mapping is a unique way of taking many ideas or pieces of information and plotting them visually. This concept map was developed via a computer program. The data for the map was generated by the scanning team examining the issues obtained from the scan which were then placed on cards. Each team member sorted the issue cards into logical piles. Each pile was given a temporary name and the issue numbers were recorded. Next each issue was rated as to its likelihood of impacting the School of Occupational Education at GRCC.

By analyzing the map, cluster relationships appear and the importance of those issues also becomes apparent. Each cluster may contain one or several issues. The number of lines around a cluster represents how highly each cluster was rated. The more lines or the higher the "walls", the more likely the issues in the cluster were rated as having an impact on the School of Occupational Education. Using geographic terminology regions begin to appear on the map. Regions are made up of several clusters with similar themes. Note also how some regions are linked to each other. For example, Cluster 8 concerns issues of technology in education and is placed in the middle between the Technology Region in the North and the Education Region in the East.

1. **Cluster 12: Workforce Training and Retraining**

Major Issue:	The impact of job lay-offs and technological changes on the need for training and retraining the workforce
Trends:	The need for training and retraining of the workforce will continue to increase as area employers add new technology and/or layoff workers.
Indicators:	The number of businesses adopting new technologies in the workplace.
	The types of technological innovations being introduced into the workplace.
	The number of requests at the college for certain types of training.
	The number of businesses laying off employees.

2. **Cluster 14: Education and Curricular Change**

Major Issue:	Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.
Trend:	Curricular changes in occupational programs will occur at a faster pace in response to rapidly changing business, industrial, and economic conditions.
Indicators:	The number of articles dealing with school reform.
	The number of articles dealing with the issue of general education vs. vocational education at the community college level.
	The types of employee characteristics desired by the employer.
	The number of requests for new programs or courses.

3. **Cluster 13: Workforce Education and Employability Skills**

Major Issue:	The level of interest in employers and government in the quality and level of training of the workforce
Trend:	All sectors hiring GRCC occupational education graduates will continue to push for competence in basic academic and technical skills.
Indicators:	The number businesses adopting basic skills classes in their training programs.
	The number of tech prep and work study programs being implemented.
	The number students in the workforce taking developmental courses.

4. **Cluster 11: Quality Emphasis in the Workplace**

Major Issue: The impact of the quality movement on business, industry and education

Trend: The adaptation of Total Quality Management (TQM) principles in all sectors of the workforce will continue to increase.

Indicators: The number businesses adopting TQM strategies in their management style.

The number of educational institutions adopting TQM strategies in their management style.

The number of conferences and conference topics related to the total quality movement.

5. **Cluster 8: Use of Multimedia Technology in Instruction**

Major Issue: The impact of multimedia technology on overall instruction in the community college

Trend: The use of multimedia technologies in the classroom will become a common instructional strategy.

Indicators: The number of multimedia articles pertaining to community college use in various publications.

The number of community colleges with formal cross college learning/instructional technology efforts.

6. **Cluster 1: Social Issues and the Workforce**

Major Issue: The impact of the American Disabilities Act

Trend: The implementation of the American Disabilities Act will increasingly impact occupational programs in the types of students served and in the adaptations made for those students.

Indicators: The number and kinds of changes which business makes in order to accommodate the physically challenged.

The number of court cases challenging the law.

The number of occupational program applicants with disabilities.

•••

Major Issue: Business-provided child care for employees

Trend: Employers will continue to seek childcare options for their employers.

Indicators: The number of businesses adding or providing child care for their employees.

The number of requests for childcare in the GRCC program.

7. **Cluster 4: Health Care Education for Jobs and Public Information**

Major Issue: Emerging job markets in the health industry

Trend: As the "baby boomers" age there will be a rising need for health care services of all kinds.

Indicators: The number and types of jobs being created in the health care industry.

The number and types of jobs being created in the mental health care industry.

• • •

Major Issue: The public need for health education

Trend: The general population will continue to see education as the key to correcting major health care concerns.

Indicators: The number and types of health education programs being offered to increase public awareness and/or correct social ills.

The number of requests of Health Division Faculty for general health care presentations.

8. **Cluster 9: Jobs and the Economy**

Major Issue: The impact of layoffs in area auto and defense manufacturers

Trend: Area employers will continue to lay-off employees as auto and defense industries downsize.

Indicator: The number of layoffs in the auto and defense related industries.

• • •

Major Issue: The downsizing of large manufacturers

Trend: Large manufacturers will continue to downsize giving rise to small to medium sized firms with diverse products and markets.

Indicators: The number of entrepreneurial start-ups in West Michigan

The number of businesses diversifying their products or markets.

• • •

Major Issue: The economic recovery in terms of job creation and retention

Trend: GR area economy will continue a slow steady recovery from the recession in both the manufacturing and service sectors.

Indicators: The number of employees called back to work in the manufacturing sector.

The unemployment rate in the manufacturing and service sectors.

The number of businesses diversifying their products or markets.

9. **Cluster 6: Decentralization of Information Technology**

Major Issue: The impact of the change from mainframe technology to microcomputer based networks

Trend: All sectors of business and industry will continue to rely more heavily on microcomputer-based networks.

Indicators: The number and kinds networks being implemented by business and industry.

The number of articles pertaining to microcomputer networks.

• • •

Major Issue: The use of Artificial Intelligence (AI) used in microcomputer based networks

Trend: Artificial Intelligence based microcomputer networks will become increasingly common in education, business and industry, and government.

Indicators: The number of AI or expert systems being incorporated into business and industry.

The number of articles pertaining to Artificial Intelligence based microcomputer networks.

10. **Cluster 7: Communications Technology Improving**

Major Issue: The impact of fiberoptic networks on video and data communications

Trend: Fiberoptic technology and its applications will continue to grow in the GR area.

Indicators: The number of fiberoptic networks installed in the local/regional areas.

The types of applications used in fiberoptic networks.

11. Cluster 5: Adverse effects of Technology

Major Issue: The negative impact of new technology on the workforce

Trend: As technology is continually integrated into the workplace, more negative impacts will be reported.

Indicator: The number and kinds of jobs which are replaced by technology.

* * *

Major Issue: The health risks involved with using new technology

Trend: As technology becomes more pervasive in the workplace, more and varying types of injuries will be reported.

Indicator: The number of injuries reported by employees which relate to the use of technology in the workplace.

11. Cluster 10: Customer Driven Organizations/Interagency Cooperation

Major Issue: The emphasis on the customer and customer satisfaction in business and industry

Trend: Business and industry will continue to focus on the customer as the centerpiece of their operations.

Indicators: The number businesses adopting TQM strategies in their management style.

The number of articles dealing with quality and customer driven management.

* * *

Major Issue: The interdependence of firms on each other and governmental agencies

Trend: Cooperation between educational entities, business and industry, and governmental agencies will become a common avenue for meeting the needs of common constituencies.

Indicators: The number of businesses announcing joint ventures.

The number of interagency projects including business/education, business/government, and various other combinations.

The number of joint projects between various educational institutions.

12. Cluster 2: Health Care Issues and the Workforce

Major Issue: The implementation of wellness programs
The increased number of HIV positive individuals in the classroom and workforce

Trend: Wellness programs and preventive medicine will gain momentum as businesses deal with rising health care costs.

Indicators: The number and types of wellness programs that exist in the area.

The number and types wellness programs that become established at and for business and industry.

* * *

Major Issue: The increased number of HIV positive individuals in the classroom and workforce

Trend: The presence of HIV workers in the workforce will continue to increase forcing businesses, government and educational institutions to develop appropriate policies.

Indicators: The types of policies businesses and educational institutions adopt concerning HIV positive individuals in their environment.

The number and types of court cases litigated concerning the rights of HIV positive individuals.

13. Cluster 3: Resource Recovery and the Environment

Major Issue: The need for more emphasis on recycling and waste reduction

Trend: Recycling efforts by communities will continue to increase as they continue to deal with issues of waste management.

Indicators: The number of recycling business starts in the area.

The number of community recycling efforts.

Environmental Scanning for Occupational Education
A joint project of
Grand Rapids Community College and Michigan State University

RESULTS OF THE SECOND CONCEPT MAP

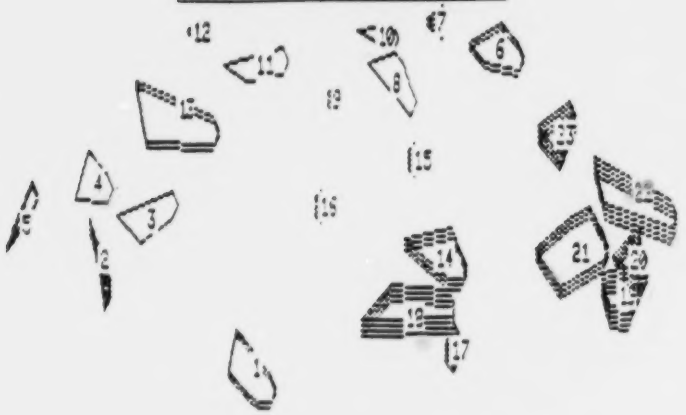
Methods: The concept map was developed by using a computer program from Concept Systems. A brief explanation of the process and the map generated can be found on the next page of this report. For a more detailed explanation of the process see ***SCANOTES* Vol. 1, No. 2.**

After the map was developed this report was constructed using the following process. First, by discerning the major theme a title was given to each cluster. Next, the major issue or issues were extracted from each cluster and were identified with a short phrase. Each issue phrase was then formed into a statement indicating the direction of the trend. Finally, the committee attempted to identify some measurable indicators for each trend. Some indicators are expressed so that each trend may be monitored through objective data to determine whether it is on the increase, decrease, or remains unchanged. Other indicators can be monitored according to the types of activities occurring in the external environment (i.e. technologies introduced, newly created jobs or job skills, etc.) The clusters are listed in order of their likelihood of impact on occupational education as rated by the participants of the first analysis session. (Clusters 15 and 20 have identical ratings.)

Applications: The data below will be compared and combined with the results of the last concept map. The entire group of scanners will review the issues contained in both concept maps at the next analysis session on **September 29, 1992.** At this session scanners will select the issues most likely to impact the School of Occupational Education at GRCC. Immediately following the analysis session a delphi questionnaire will be constructed and sent to community leaders and outside faculty experts. The purpose of the delphi will be to provide external validation for the issues identified by the scan and to begin to translate those issues into the jobs and job skills which will be needed in the future. The results of the delphi will be discussed at the final analysis session on **November 20, 1992.** At that time, recommendations for action will be drafted for submission to the Dean of Occupational Education.

Endnote: This map appears to be more defined than the first attempt. This improved clarity is probably due to an improved experience level, both of the scanners providing the information and the steering committee analyzing the concept map. The learning experience has been a good one and the technique of concept mapping as a tool to sort and rate issues has drawn us closer to discovering what issues may impact School of Occupational Education at GRCC in the future.

RATING CLUSTER MAP



CLUSTER KEY

C17: Technology's Role in Educational Reform	C20: Educational Reform	C7: Slow GR-Area Economic Recovery
C19: Community Colleges	C15: Fed. Support for Sm. Manufacturers	C12: Recycled Materials Markets
C18: Technology Training/ Curricular Changes	C21: Workforce Training Curricular Changes	C8: Workforce
C16: Retraining Older Adults	C9: Women in the workforce	C4: Alternatives to Hlth. Care Insurance/ Eldercare
C23: Area Economic Development	C14: Child Development	C11: Institutional Collaboration
C22: Employability Skills/Colleges Assisting Business w/ Training	C1: Technological Advancement	C3: Expanding Health Care Services/Health Insurance Reform
C2: Occupational Therapy & Assistants	C6: Global Markets for Manufacturing	C10: Policies to Meet Changing Markets
	C5: American Disabilities Act	
	C13: Higher Ed & Health Care Growth	

Workplace in the North - Technology in the South
Education in the East - Health Services in the West

Concept Mapping: Concept mapping is a unique way of taking many ideas or pieces of information and plotting them visually. This concept map was developed via a computer program. The data for the map was generated by the scanning team examining the issues obtained from the scan which were then placed on cards. Each team member sorted the issue cards into logical piles. Each pile was given a temporary name and the issue numbers were recorded. Next each issue was rated as to its likelihood of impacting the School of Occupational Education at GRCC.

By analyzing the map, cluster relationships appear and the importance of those issues also becomes apparent. Each cluster may contain one or several issues. The number of lines around a cluster represents how highly each cluster was rated. The more lines or the higher the "walls", the more likely the issues in the cluster were rated as having an impact on the School of Occupational Education. Using geographic terminology regions begin to appear on the map. Regions are made up of several clusters with similar themes. Note also how some regions are linked to each other. For example, Clusters 14, 16, 17, and 18 concern issues related to training and technology. These clusters are located between the Technology Region in the South and the Education Region in the East and lead one to believe that education and technology will be key issues in training and retraining our workforce.

1. **Cluster 17: Technology's Role in Educational Reform**

   Major Issue: Computers and other technological innovations must play a major role in educational restructuring.

   Trend: The use of computers by students and instructors to implement analysis, synthesis, and evaluation will continue to increase.

   Indicator: The number of schools, with integrated curriculums using computers.

2. **Cluster 19: Community Colleges**

   Major Issue: Community college's must serve more students with less governmental financial support.

   Trend: An increasing number of community colleges will be consolidating programs and seeking nongovernmental sources of revenue.

   Indicators: The number of partnerships with business and industry.

   The number of colleges with corporate development campaigns.

   • • •

   Major Issue: Community colleges must be able to anticipate the future.

   Trend: The need for focused environmental scanning will be recognized by more community colleges.

   Indicators: The number of colleges adopting scanning processes.

   The number of colleges participating in environmental scanning processes.

3. **Cluster 18: Technology Training/Curricular Changes**

   Major Issue: Courses that teach emerging technologies will be increasingly in demand by business and industry.

   Trend: Requests for classes and programs in emerging technologies by business and industry will increase.

   Indicator: The number of requests for emerging technology related programs and courses.

4. **Cluster 16: Retraining Older Adults**

   Major Issue: As the workforce ages, older workers will need retraining to meet the needs of industry.

Trend: The number of nontraditional students will comprise an increasing percentage of enrollment.

Indicators: The average age of students at GRCC.

The enrollment figures of students in retraining programs and courses.

5. **Cluster 23: Area Economic Development**

Major Issue: The School of Occupational Education should be involved in the service area's economic development efforts.

Trend: GRCC partnerships with agencies promoting and facilitating economic development will increase.

Indicators: The number of GRCC/economic development partnerships.

The number of specific business centered programs operated by GRCC and other institutions.

6. **Cluster 22: Employability Skills/Colleges Assisting Business w/ Training**

Major Issue: Employers continue to demand that employees have basic English and math skills.

Trend: Screening tests for the purposes of assessing basic skills will be used by employers at an increasing rate.

Indicator: Employer survey question assessing the use of screening tests.

• • •

Major Issue: College level skills are increasingly necessary to guarantee employment.

Trend: Jobs requiring more than a high school diploma, but less than a four year degree will become more and more prevalent.

Indicator: The number of job titles requiring an associates degree.

7. **Cluster 2: Occupational Therapy and Assistants (OT's and OTA's)**

Major Issue: Demand for occupational therapists and occupational therapy assistants will require the expansion of established programs and possibly the start of some new ones.

Trend: Area health care agencies will demand more trained occupational therapists and OT assistants.

Indicators: The number of classified adds seeking OT's and OTA"s.

The number of requests for graduates of GRCC's OTA program.

The number of inquiries and applications for GRCC's OTA program.

8. **Cluster 20 Educational Reform**

Major Issue: Public and governmental entities will accelerate their demands that higher education be accountable.

Trend: Increased standards and requirements placed upon higher education institutions.

Indicators: The number of legislative bills introduced requiring aspects of accountability.

The number of NCA requirements reflecting accountability issues.

• • •

Major Issue: As reforms take place in the K-12 education students coming to the community college will have different needs.

Trend: Basic education skills levels of students entering the community college will continue to increase.

Technical skill levels of students entering the community college will continue to rise.

Indicators: The number of students in developmental courses.

The number of students entering the college with previous training in a vocational education program.

8. **Cluster 15: Federal Support for Small Manufacturers**

Major Issue: As large manufacturers downsize, smaller companies will emerge as the mainstay of manufacturing.

Trend: Medium and small manufacturers will increasingly establish operations in western Michigan.

Indicator: The number of area manufacturers under 500 employees.

9. **Cluster 21: Workforce Training/Curricular Changes**

Major Issue: A decrease in public funding continues to threaten customized training despite the ability of the community colleges to meet industry's need.

Trend: The number of requests for customized training will exceed the ability to deliver.

Indicator: The number of customized training program requests denied.

•••

Major Issue: Curricular changes in business programs will be needed to respond to changes in the management styles of employers.

Trends: Requests for courses in TQM, team building skills, problem-solving, etc. will rise.

Requests for courses and programs reflecting and interdisciplinary approach will continue to rise.

Indicators: The number of articles from business and industry demanding the "total quality" approach.

The number of requests for programs and courses reflecting an interdisciplinary approach.

•••

Major Issue: Employers demand basic skills and problem-solving abilities for electricity and electronics students.

Trends: Occupational program goals will increasingly reflect the need for basic educational skills.

Occupational program goals will increasingly reflect the need for problem-solving skills.

Indicators: The number of Occupational Ed. program goals which ask for knowledge of basic educational skills.

The number of Occupational Ed. program goals which call for firm understanding of problem-solving skills.

The number of instructors requiring student assignments which entail analysis, synthesis and evaluation of a job-related problem.

10. **Cluster 9: Women in the Workforce**

Major Issue: The number of women in the workforce will bring issues to the surface related to pay equity and entrance into nontraditional occupations.

Trend: The number of women in nontraditional occupational programs will continue to rise.

Indicator: The percentage of women enrolled in nontraditional occupational programs.

11. **Cluster 14: Child Development**

Major Issue: Substance-impacted children will be entering the educational system.

Trend: The need for child care workers and teachers to understand and develop strategies to deal with substance-impacted children will increase.

Indicator: The number substance-impacted children entering day care centers.

12. **Cluster 1: Technological Advancement**

Major Issue: Fiber optic networks and other systems are being introduced in increasing numbers.

Trend: The use of digital networks combining voice, data, and graphics will increase in number.

Indicators: The number of articles about digital networks.

The number of businesses establishing fiber optic networks.

• • •

Major Issue: Technology will continue to replace much manual labor.

Trend: Increased automation of systems and processes in the public and private sectors will continue to reduce the need for manual labor.

Indicator: The number of lay-offs because of the initiation of automated systems and processes.

Major Issue: CD-ROM and multimedia computer applications will become commonplace.

Trend: Major computer software manufacturers will sell ready to run multimedia applications.

Indicator: The number of computer software manufacturers selling multimedia applications.

13. **Cluster 6: Global Markets for Manufacturing**

Major Issue: Area manufacturing employment will continue to decrease through the year 2000.

Trend: A continued decline in manufacturing jobs will be seen throughout western Michigan despite economic development efforts.

Indicator: The number of manufacturing jobs lost.

***

Major Issue: Tapping global markets is the key to the success of US manufacturing.

Trend: US/European and other joint ventures will continue to increase as the United States takes it share of the global market.

Indicators: The number of companies adopting ISO 9000 standards.

The number of area manufacturers establishing joint ventures with foreign companies.

14. Cluster 5: Americans with Disabilities Act

Major Issue: The Americans with Disabilities Act (ADA) will have wide ranging effects on all sectors of the population.

Trend: All sectors of the workforce will be setting ADA policies and procedures which will continue to impact the types of students we need to train in occupational education.

Indicators: The number of students with disabilities enrolled in occupational programs.

The number of students with disabilities enrolled in customized training programs.

15. Cluster 13: Higher Ed and Health Care Growth

Major Issue: Higher education and health care will be important parts of the downtown Grand Rapids economy.

Trend: Cooperation between institutions of higher education and health care providers will increase in frequency.

Indicators: The number of requests for training by area hospitals.

The number of cooperative efforts between GRCC and area hospitals.

16. Cluster 7: Slow Grand Rapids-Area Growth

Major Issue: Grand Rapids area economic recovery will be slow but steady.

Trend: Area economic indicators will continue to show a pattern of slow growth.

Indicators: The unemployment rate of Kent and Ottawa counties.

The number of businesses moving into the area.

The number of articles proposing lay-offs in area businesses.

17. **Cluster 12: Recycled Materials Markets**

Major Issue: Markets product ideas are needed for recycled materials.

Trend: New products marketed will increase as the use of recycled materials increases.

Indicator: The number of new products using recycled materials.

18. **Cluster 8: Workforce**

Major Issue: The majority of people entering the workforce will be ethnic minorities and women.

Trend: The percentage of minorities and women entering occupational programs will continue to rise.

Indicators: The percentage of women in nontraditional occupational programs.

The percentage of minorities in nontraditional occupational programs.

* * *

Major Issue: Participatory management and education are key to successful businesses.

Trend: Increasing demand by business and industry for courses in team building, TQM, and employee involvement.

Indicator: The number of requests for TQM-like courses.

19. **Cluster 4: Alternatives to Health Care Insurance/Eldercare**

Major Issue: The need for elderly day care and respite care.

Trend: Health care agencies will offer new programs for the elderly and expand existing ones.

Indicators: The number of new elderly respite care programs.

The number of health care agencies adding eldercare to their list of services.

Major Issue: Hospitals seek alternative health care options for the poor.

Trend: Health care options for the poor will increase in the region.

Indicator: The number of health care reimbursement programs for the poor.

20. **Cluster 11: Institutional Collaboration**

Major Issue: Collaboration on the use of resources among government, education, health care, and business and industry.

Trend: Increased partnerships between government, education, health care, and business and industry for the purpose of managing health care costs.

An increase in collaborative effort between public and private sectors will increase in order to provide more effective service.

Indicators: The number of articles discussing alternatives to health care insurance.

The number of partnerships between various sectors in order to improve service.

21. **Cluster 3: Expanding Health Care Services/Health Insurance Reform**

Major Issue: Federal money will continue to be come available for the development of eldercare programs.

Trend: Federal grants for the establishment of eldercare programs will become increasingly available.

Indicator: The number of grants awarded in the region to those health care agencies establishing eldercare programs.

• • •

Major Issue: Employee health care costs threaten the fiscal viability of employers.

Trends: Health care cost containment programs will become very prevalent.

The employee share of health care insurance costs will rise.

Indicators: The number of health care cost containment programs established.

The number of businesses requiring employees to pay part of their health care cost.

22. **Cluster 10: Policies to Meet Changing Markets**

Major Issue: A major downtown market consists of office workers and conventioneers.

Trend: Business and education will offer new products and services for office workers and conventioneers.

Indicator: The number of new businesses designed to meet the needs of the downtown market.

***

Major Issue: A U.S. policy to confront the global competition facing American businesses should be developed.

Trend: The next federal administration will include an industrial policy which addresses global competition on their agenda.

Indicator: The U.S. government adopts and industrial policy.

Appendix 9: Delphi Materials

October 15, 1992

1~ 2~, 3~
4~

Dear 1~,

Grand Rapids Community College's School of Occupational Education, in partnership with Michigan State University, has been involved for the past 10 months in an environmental scanning process to assess future occupational education and training needs particular to the West Michigan area. The goal of the process is to determine regional growth industries, point direction for needs studies, make recommendations to improve present programs, suggest programs for phase out, and monitor emerging issues.

1~, we are seeking your help in a Delphi survey to supplement the findings of the scanning process. This type of survey solicits expert opinion through an efficient structured communication process. We are not asking you to attend any meetings! Rather, your participation means reflecting on the attached questions related to future jobs and job skills and FAXing back your responses to (616) 458-6665 within 5 days. This activity will probably take you about 20 minutes.

Your responses along with those of the other 15 panelists will be compiled and results of the first round shared. With the benefit of others' input, we will hold a second round. In the second round you can revise your opinion, adhere to, or elaborate on your original positions, estimates or forecasts.

Typically, delphi panelists find their participation enjoyable. They are able to express their perspective and learn the views of other experts--all without ever being brought together in one place. The results of the Delphi survey will be most useful to the GRCC Occupational Education Environmental Scanning process. We are looking to the results of the Delphi survey to validate the findings of our scanners, identify gaps, or surface alternative interpretations.

Although Delphi panelists' individual comments remain anonymous, you should know that other participants are CEO and human resource executives of West Michigan companies and faculty experts from three universities.

We will call you in a few days to answer any questions regarding the process, its intent and outcomes, and confirm your participation. Immediately, the round one survey will be FAXed to you. The second round of the Delphi will be completed by November 9, 1992. A final report will be available by December 15. We look forward to your participation.

Sincerely,

Mark P. Champion, M.S.
Evaluation Specialist
GRCC Institutional Research

Lorilee R. Sandmann, Ph.D
Director
MSU-West

The development of this model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area is supported by Grand Rapids Community College, Michigan State University, and the W.K. Kellogg Foundation.

GRAND RAPIDS COMMUNITY COLLEGE
SCHOOL OF OCCUPATIONAL EDUCATION
DELPHI SURVEY

Round 2
Return By November 9, 1992

Thank you for responding to Round 1 of our Delphi Survey. Our response rate was 78% and we are very excited about the enclosed results. We ask that you help us one more time by reviewing the results and responding to Round 2.

Filling out the following questionnaire will take approximately 20 minutes. Please do so, and **FAX your response to 616-458-6665 by November 9, 1992.** Responses will be summarized and sent to you. Thank you again for your assistance.

I. DIRECTIONS: The results of the first survey have been compiled and are contained in the following pages. The issues are listed by the highest mean score in "Importance". Urgency is used as a secondary rating. **As you look through the issues, examine the rankings and the comments to see if your opinion on the issue may have changed. After examining the issues, again rate each one, in terms of the degree of importance and urgency.**

After you have rated each issue, select the two (2) issues which you think are most important and the two (2) issues you think are the least important and briefly desoribe your rationale. It would be very helpful to us if you would include any job titles or job skills that you believe may be related to the issues.

For ease of FAXing, separate Response Sheets have been included. **FAX BACK ONLY THE RESPONSE SHEETS (pp. 10 and 11).**

Importance
4--will have great impact on future occupation and training needs
3--will have moderate impact
2--will have little impact
1--will have no impact

Urgency
4--highly likely to occur soon
3--somewhat likely to occur soon
2--not very likely to occur soon
1--will not occur soon

ISSUE	IMPORTANCE 4 - 1 (Round 1 Mean Score)	URGENCY 4 - 1 (Round 1 Mean Score)	IMPORTANCE 4 - 1 (Rate for Round 2)	URGENCY 4 - 1 (Rate for Round 2)	COMMENTS (Round 1)
5 Changes in the workplace (layoffs, technological replacement of workers, downsizing of large manufacturers) are requiring technology and other training and retraining.	3.72	3.56			Statement unclear. Inability to react. It is already occurring.
15 Emphasis on quality participatory management, customer satisfaction, and education are key to successful businesses.	3.71	3.71			Also to student satisfaction. Teams are what we use more and more. Both internal and external customers. And college. Obviously. This also applies to schools; All schools-customer satisfaction.

6b Computers and other technological innovations must play a major role in educational reform.	3.72	3.28			Replace must with can. Decade-old phenomenon. N/C Machines. Computers used as instructional devices will probably not change much. Students need these skills in the workplace.
11 Community colleges must be able to anticipate the future.	3.69	3.38			More important to react to the present. There are <u>some</u> leaders who know!! Dialogue between business and Ed ., vital! And be flexible. First silly question - the answer, like mother and apple pie is Yes. I can't answer; no one can anticipate the future alone or in a vacuum.

4	U.S. policy and programs will be ever increasingly affected by global markets.	3.61	3.50			Politicians cannot react. All students need more on this.
1	Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.	3.61	3.28			Do not think educators can react - fast. Make education "real". Changes will take time. High need unlikely Ed. can or will change quite enough. Get away from traditional college degree requirements and teach job skills. Traditional programs slower to respond. Much of current teaching is irrelevant to business needs. Not only the curriculum, but the way it will be delivered.

10 Increased demands by the public to ensure basic academic skills and problem solving abilities among students leaving higher education programs.	3.56	3.56			I hope. ! Basic skills need to be taught in K-12, not higher education. Higher education ought to expect these skills from K-12 graduates. College shouldn't replace high school.
12 The increased level of interest of employers and government in the quality and level of training of the workforce will require a like interest among community colleges.	3.50	3.61			This is an open opportunity if cc's don't respond others will. Its happening! Not sure of the government part. Michigan slow to respond. Of course.

6a	Courses that teach emerging technologies will be increasingly in demand by business and industry.	3.50	3.22			We must first respond to current technology. Adequate supply of teachers of #1. Be careful not to teach specifics that can become obsolete. They are in demand now.
14	Emerging job markets in the health industry will require community colleges to modify existing programs and create new ones.	3.39	3.00			Universal health coverage? Definitely. Shorten programs in high demand occupations. i.e. LPN
2	Multimedia technology will have an impact on overall instruction in the community college.	3.33	2.94			It can have an impact if we allow. Should have. Need to verify format first.

7 As reforms take place in the K-12 education, students coming to the community college will have different needs.	3.28	2.83			K-12 cannot change fast enough. This will take more time than we think. K-12 mired, much talk, no action.
13 GRCC School of Occupational Education could enhance the economic recovery of the Grand Rapids metropolitan area in terms of job creation and retention.	3.22	2.94			Only if they choose this path as serious goal. There are many other factors. <u>Not</u> alone; GRCC is only one entity; they need to work with others.
8 Health care costs and the public's need for health education will be important to the greater Grand Rapids economy.	3.17	3.17			These issues are questioned by new employers already.
9 Increased minority and female participation in the workforce will demand issues of child care, pay equity and non traditional job opportunities to be seriously addressed.	3.11	3.11			The numbers of these two groups are growing. A must! Organizations other than colleges need to look at these issues also.

3	Students with disabilities will be a larger share of the student population, significantly impacting education and other systems in light of their protection under the ADA (Americans with Disabilities Act).	2.89	2.72			ADA has already had impact. Students still have to be motivated to continue. I believe that the <u>workforce</u> will see a larger share of disabled people who are already trained. Unless you include Dyslexia.

ROUND 1 RESULTS

II. **Are there other critical issues related to general occupational growth or job skill changes in the next five to 10 years that we have overlooked? (Restrict your responses to West Michigan.) What would be your rationale for including these items?**

Skills in information processing turning data into information and information into knowledge.

More emphasis on teamwork and teamwork skills.

2 year AA programs should have a broader focus - i.e. manufacturing students must also understand basic business concepts and accountants must understand technology.

Continued disinvestment in the manufacturing sector.

Continued underpreparation of college students.

Continued low expectations of colleges.

Continued focus on adding versus improving programs.

Continued emphasis of local labor market needs. (I couldn't restrict my responses to W. Michigan)

(Rationale: observation, experience, guessing)

Coordination of Post Secondary programs of education.

Linkage between CC and Public K-12 Programs.

Linkage between CC and Businesses.

Organizational and policy changes which will facilitate community outreach, more rapid program change and resource allocations.

How do you improve K-12 education. They are not ready for college or work.

Should be renewed interest in apprenticeships. People can learn on the job what they now learn in many college level programs. Need to develop customer-oriented training opportunities that mesh with simultaneous on-the-job-training.

Need to work with K-12 systems to enhance student retention in high school especially that of minority students. With the decline of high school age individuals and the increasing retirement rate, attention must be paid to the need to have an adequate supply of individuals for the workplace.

More emphasis on: Problem-solving; Team work; Cognitive skills; Citizenship; Service to others.

When my Grandfather graduated from Grand Rapids High School in 1899, his diploma was a "guarantee" to any prospective employer that he could read competently, write correct sentences and paragraphs, and do arithmetic - sums to a specific level of achievement. Since this is no longer true, you will be doing the business sector a great service to make it true by the end of your two years.
Grand Rapids built a reputation as a good place to locate a business because of its "skilled" (read educated) workforce. We are in danger of losing that reputation without a renaissance in basic education. We need substance not glitz.

General Comment: Questions/design suggests theses issues/problems/etc. are matters that we anticipate. Some of these factors have already had an "impact" and colleges have responded there may be some regional variation, but I'm concerned that are reading these items differently.

DELPHI ROUND 2
RESPONSE SHEET 1

DIRECTIONS: **Place your ratings in the following table and FAX to (616) 458-666. Thank you!**

ISSUE NUMBER	IMPORTANCE	URGENCY
5		
6b		
15		
11		
4		
1		
10		
12		
6a		
14		
2		
7		
13		
8		
9		
3		

DELPHI ROUND 2
RESPONSE SHEET 2

RATIONALE

DIRECTIONS: Select two (2) issues which you feel are the MOST critical to occupational education and provide your rationale. Provide any job titles or skills which apply to your chosen issue that may be need in the next ten years. FAX to (616) 458-6665.

1. Issue # _____

Future Jobs or Job Skills:

2. Issue # _____

Future Jobs or Job Skills:

DIRECTIONS: Select two (2) issues which you feel are the LEAST critical to occupational education and provide your rationale.

1. Issue # _____

2. Issue # _____

October 25, 1992

1~ 2~, 3
4~

Dear 1~,

Thank you for participating in the Environmental Scanning for Occupational Education Delphi Survey. Your responses were very useful and much appreciated. The enclosed Round 2 results reflect an 88% return rate.

These results have been distributed to the GRCC scanning group and will be used to help formulat recommendations to the Dean concerning the issues most critical to occupational education. We hope that through the environmental scanning process significant changes can be made in the way that occupational education conducts business. By continually scanning and analyzing information pertinent to the community, we are seeking to better serve its needs.

Thank you again for your help. Once the recommendations have been formulated we will send yo a copy. If you are interested in more information about our project or environmental scanning please feel free to contact us.

Sincerely,

Mark P. Champion, M.S.
Evaluation Specialist
GRCC Institutional Research

Lorilee R. Sandmann, Ph.D
Director
MSU-West

The development of this model for Environmental Scanning to Systematically Assess Future Occupatio Education and Training Needs of a Michigan Community College Service Area is supported by Grand Rap Community College, Michigan State University, and the W.K. Kellogg Foundation.

GRAND RAPIDS COMMUNITY COLLEGE
SCHOOL OF OCCUPATIONAL EDUCATION
ENVIRONMENTAL SCANNING
DELPHI SURVEY

ROUND 2
FINAL RESULTS

RATING SCALE

Importance
4--will have great impact on future occupation and training needs
3--will have moderate impact
2--will have little impact
1--will have no impact

Urgency
4--highly likely to occur soon
3--somewhat likely to occur soon
2--not very likely to occur soon
1--will not occur soon

ISSUE	IMPORTANCE 4 - 1 (Round 2 Mean Score)	RANGE	MODE	URGENCY 4 - 1 (Round 2 Mean Score)	RANGE	MODE
5 Changes in the workplace (layoffs, technological replacement of workers, downsizing of large manufacturers) are requiring technology and other training and retraining.	3.69	3-4	4	3.69	3-4	4
4 U.S. policy and programs will be ever increasingly affected by global markets.	3.63	2-4	4	3.75	2-4	4
15 Emphasis on quality participatory management, customer satisfaction, and education are key to successful businesses.	3.63	2-4	4	3.63	2-4	4
10 Increased demands by the public to ensure basic academic skills and problem solving abilities among students leaving higher education programs.	3.56	3-4	4	3.37	2-4	4
12 The increased level of interest of employers and government in the quality and level of training of the workforce will require a like interest among community colleges.	3.56	2-4	4	3.37	2-4	4
1 Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.	3.50	2-4	4	3.38	2-4	4
6b Computers and other technological innovations must play a major role in educational reform.	3.44	2-4	4	3.25	2-4	3
9 Increased minority and female participation in the workforce will demand issues of child care, pay equity and non traditional job opportunities to be seriously addressed.	3.44	2-4	4	2.94	2-4	3

ISSUE	IMPORTANCE 4 - 1 (Round 2 Mean Score)	RANGE	MODE	URGENCY 4 - 1 (Round 2 Mean Score)	RANGE	MODE
11 Community colleges must be able to anticipate the future.	**3.38**	2-4	4	**3.25**	2-4	4
6a Courses that teach emerging technologies will be increasingly in demand by business and industry.	**3.31**	2-4	4	**2.28**	2-4 *	3
14 Emerging job markets in the health industry will require community colleges to modify existing programs and create new ones.	**3.25**	2-4	3	**3.00**	2-4	3
8 Health care costs and the public's need for health education will be important to the greater Grand Rapids economy.	**3.06**	2-4	4	**2.94**	2-4	3
2 Multimedia technology will have an impact on overall instruction in the community college.	**3.06**	1-4	3	**2.56**	1-3	3
3 Students with disabilities will be a larger share of the student population, significantly impacting education and other systems in light of their protection under the ADA (Americans with Disabilities Act).	**3.00**	2-4	3	**2.63**	2-4	3
7 As reforms take place in the K-12 education, students coming to the community college will have different needs.	**3.00**	2-4	3	**2.63**	2-3	3
13 GRCC School of Occupational Education could enhance the economic recovery of the Grand Rapids metropolitan area in terms of job creation and retention.	**2.88**	1-4	3	**2.63**	1-4	3

DELPHI ROUND 2
-RATIONALE-

DIRECTIONS: Select two (2) issues which you feel are the MOST critical to occupational education and provide your rationale. Provide any job titles or skills which apply to your chosen issue that may be needed in the next ten years. FAX to (616) 458-6805.

ISSUE 5
Changes in the workplace (layoffs, technological replacement of workers, downsizing of large manufacturers) are requiring technology and other training and retraining.

1. "Changes in the workplace" issue captures a number of the "issues" on your list.

1. As the recession deepens, only the knowledge workers and specialists will survive-good lesson for the future!
Future Jobs and Job Skills: Computer analysts-Readers!, Data analysts.

1. We must address the economic and social infrastructure associated with employment.

   Education, especially the K-12 system must change to recognize employment as a major issue.

1. Organizational restructuring is necessary for competitive reasons in the private sector, and for cost and efficiency reasons in public sector. That means changes in job "arrangements", responsibilities, tasks, etc. are essential.
Future Jobs and Job Skills: Teach general business, general understanding of organizations and how people work within them-necessary for all, not just managers.

1. Change in the workplace is the issue of today and the future. Titles and job descriptions will become open ended and ever changing. The impact on the worker of the future will require the person to have solid educational base, ability to learn to learn (continually), high degree of ___ and interpersonal flexibility. The name of the game is "change".
Future Jobs and Job Skills: Jobs of the future will continue to fall into traditional disciplines, i.e. engineering, accounting, etc. How we work with one another while continually updating our technical base and team skills will see the greatest change.

1. This issue and #1 are related closely because changes in the workplace make it increasingly important that community colleges react and respond quickly to business needs. Colleges can work closely with business and develop job skills programs quickly as need occurs.

1. Manufacturers are going to stay lean and mean, many workers will not be replaced and will need retraining.
Future Jobs and Job Skills: More well-rounded skills, less focus on our skill in a manufacturing operation.

(ISSUE 5 CONTINUED)

1. **ISSUE 5 and 6b**
The technological changes taking place because of computers and computer driven equipment will require very different skills for all workers.

1. **ISSUE 5**-No Comment

2. CC'S need to "train" and "educate" students to think, problem solve, etc.

2. **ISSUE 15 and 5**
The way in which work is accomplished through group effort and new organizational structures will require employees to be able to function in a very different environment.

2. Training and retraining are important as the economy shifts from the manufacturing sector to the service area.
Future Jobs and Job Skills: Computer literacy - perhaps computer operator degree similar to AAS in secretarial sciences. Critical thinking skills.

*****

ISSUE 1
Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.

1. Constant change in the work-force requires constant change in education. Real examples, real needs must be addressed from a business perspective.
Future Jobs and Job Skills: Change management, self-managed work teams, team building, group dynamics.

1. Without the ability to respond rapidly technical (occupational) education will not be able to adjust curricula or provide new career emphasis in a timely fashion. This will force employers to seek alternative ways of preparing workers- perhaps and increase in on-the-job trained employees.

2. ISSUE 1,8,11
Education must realize the importance they have on the future "Quality of Life" . Liberal Arts does not put food on the table. World market the better educated <u>all</u> are the better we can compete. and pay a livable wage. Continuous Improvement in education not lower standards and expectations working with business leaders.
Future Jobs and Job Skills: All areas.

(ISSUE 1 CONTINUED)

2. We must address the economic and social infrastructure associated with employment.

   Education, especially the K-12 system must change to recognize employment as a major issue.

2. This issue and #5 are related closely because changes in the workplace make it increasingly important that community colleges react and respond quickly to business needs. Colleges can work closely with business and develop job skills programs quickly as need occurs.

*****

ISSUE 15
Emphasis on quality participatory management, customer satisfaction, and education are key to successful businesses.

1. All of education needs to become customer focused and practice TQM or some similar philosophy.

1. Education - K-12/college/business a major key to success of W Michigan-Not "Mickey Mouse" courses to key student through - First culture the "Why is": Why in business/why in profits/why continual improvement. Next the hard sciences-SPC/___/Problem-solving/Teams.
   Future Jobs and Job Skills: All areas.

2. Constant change in the work-force requires constant change in education. Real examples, real needs must be addressed from a business perspective.
   Future Jobs and Job Skills: Change management, self-managed work teams, team building, group dynamics.

2. Future success will be predicated on customer satisfaction and our ability to continually improve everything we do. Every person must take responsibility for the quality of their output. Accountability will be part of every job as it relates to customer satisfaction, total quality output and continuing improvement in all that we do.
   Future Jobs and Job Skills: These concepts need to be part of every job trade or profession.

*****

ISSUE 4
U.S. policy and programs will be ever increasingly effected by global markets.

2. Incorporate into the curriculum. Apprenticeship type methods; i.e. parochial job experience with ___ also incorporate global overview of economics.

2. Global trade, increased exports. Increased manufacturing/joint ventures with other countries, world wide marketing. NAFRA will strongly impact our training and education.
Future Jobs and Job Skills: Languages, Cross-cultural awareness.

*****

ISSUE 11
Community colleges must be able to anticipate the future.

2. Community colleges (at least in the past) have shown an ability to be flexible and adjust to needs. They need to constantly re-evaluate themselves and their programs if they are to remain effective. Watching what's happening in the "real" world is the key to it all. "I skate to where the puck will be."-Wayne Gretzky

*****

ISSUE 6b
Computers and other technological innovations must play a major role in educational reform.

2. No Comment
Future Jobs and Job Skills: Computer repair persons, programmers, robotics.

*****

ISSUE 10
Increased demands by the public to ensure basic academic skills and problem solving abilities among students leaving higher education programs.

2. These skills are most important, though one would argue that it is too late at the CC stage.

ISSUE 9

Increased minority and female participation in the workforce will demand issues of child care, pay equity and non traditional job opportunities to be seriously addressed.

2. By 2000 "WASP's" will be a minority-you figure it out...

Future Jobs and Job Skills: Shared Jobs, Flexible hours and locales, Cultural diversity, gender "inclusion".

*****

ISSUE-ALL

1. An adequate occupational education agenda must include some of all these issues. It must not be limited to one or two issues.

*****

ISSUE-?

1. I am surprised that there is no issue mode of a critical role now played by CC's; namely preparing some H.S. graduates to successfully complete academic or professional programs at universities. Many H.S. grads fell they are in purgatory! CC's have served many of them! **Future Jobs or Job Skills:** Undergraduate at University.

DIRECTIONS: Select two (2) issues which you feel are the LEAST critical to occupational education and provide your rationale.

ISSUE 8

Health care costs and the public's need for health education will be important to the greater Grand Rapids economy.

1. Single issues, while important are not as critical as those affecting large segments of the population.

1. College positioned to respond to changing needs.

1. **ISSUE 8**

1. **ISSUES 8,9,3**
   Social issues important-but more important to teach h how to be a productive member of our society and skills necessary to success.

2. Its a moot point because its an issue that will be resolved by the federal legislation in the next 12 months.

*****

ISSUE 13

GRCC School of Occupational Education could enhance the economic recovery of the Grand Rapids metropolitan area in terms of job creation and retention.

1. State based on misunderstanding relationship between/among variables.

1. GRCC can only be one player in this process. It requires much more involvement for success.

1. The college cannot create new jobs.

1. Job retention and creation is a second-order effect of CC's not a primary goal.

ISSUE 14
Emerging job markets in the health industry will require community colleges to modify existing programs and create new ones.

2. College positioned to respond to changing needs.

2. I can't see how this statement adds anything to the discussion.

2. Huge resources are already being allocated in health care and training in contrast to other states.

* * * * *

ISSUE 3
Students with disabilities will be a larger share of the student population, significantly impacting education and other systems in light of their protection under the ADA (Americans with Disabilities Act).

1. Only because of the low number of disabled and because with ADA its not an issues. Compliance is required

1. Access and facilities will be impacted with a larger population of disabled students, but this increase should have little impact on curricula.

1. **ISSUE 3**-See issue Number 8

* * * * *

ISSUE 11
Community colleges must be able to anticipate the future.

1. This statement is indicative of the issue. Failure to anticipate means you plan to fail.

1. Others will work on this issue. Stay up to date and flexible to change.

2. If they are flexible enough they can change on short notice.

ISSUE 6a
Courses that teach emerging technologies will be increasingly in demand by business and industry.

1. I think business and industry look to education for the fundamental of current technologies.

2. We teach too many specifics which are obsolete when the student becomes the worker.

* * * * *

ISSUE 2
Multimedia technology will have an impact on overall instruction in the community college.

2. We must first focus on what we want to do. Doing the same old things through multimedia is not the solution. We must first be doing the right things then we can do them right.

2. It is not important enough to be an "impact". Primitive software and expensive hardware will limit application in education.

* * * * *

ISSUE 7
As reforms take place in the K-12 education, students coming to the community college will have different needs.

2. There is little hope that much will change in the K-12 system in the near future. Long term issue that will take years to resolve.

2. K-12 reforms will be slow and not require immediate changes in higher education and training.

* * * * *

ISSUE 9
Increased minority and female participation in the workforce will demand issues of child care, pay equity and non traditional job opportunities to be seriously addressed.

1. **ISSUE 9**-See issue #8

ISSUE 9
2. These items are important for the workplace. Am not sure how the college can influence the workplace.

ISSUE 1
Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.

1. Curricular changes are not the issue. We must fundamentally change the sense of our purpose and customers.

2. The curriculum is probably in pretty good shape. Basics continue to be communication and computation.

* * * * *

ISSUE 4
U.S. policy and programs will be ever increasingly affected by global markets.

2. Occupational education cannot be all things to the whole world. GRCC should focus on the local area (region) and employer needs in that proximity. This may be impacted by global markets. Watch. Listen, then respond with change in programs as needed.

* * * * *

ISSUE 6b
Computers and other technological innovations must play a major role in educational reform.

1. Computers will continue to provide and play a major role without special emphasis by community colleges.

Appendix 10: Recommendation Writing Materials

From: Mark Champion (MCHAMPIO)
To: SCANNERS
Date: Friday, November 13, 1992, 3:30 pm
Subject: ENVIRONMENTAL SCANNING ANALYSIS SESSION

WE'VE SCANNED,
WE'VE ANALYZED,
AND
NOW THE TIME HAS COME TO RECOMMEND!

THE RESULTS OF THE DELPHI SURVEY ARE BEING SENT TO YOU AS WE SPEAK. THE STEERING COMMITTEE IS PLEASED WITH THE RESULTS AND WE HOPE YOU WILL BE ALSO. TAKE SOME TIME TO LOOK OVER THE RESULTS BEFORE YOU ATTEND THIS VERY IMPORTANT MEETING.

WHEN: FRIDAY, NOVEMBER 20, 1992, 12 NOON TO 3 PM
WHERE: THE MULTIPURPOSE ROOM IN THE STUDENT CENTER
WHAT: BUFFET LUNCH AND ANALYSIS SESSION

AGENDA

1. LUNCH
2. DISCUSSION OF THE DELPHI RESULTS
3. DEVELOP WRITTEN RECOMMENDATIONS FOR THE DEAN OF OCC ED.

YOUR CONTRIBUTION IS ESSENTIAL TO THE SUCCESS OF THIS MEETING. IF THERE IS ANY WAY THAT YOU CAN REARRANGE YOUR SCHEDULE TO BE THERE, PLEASE DO.

PLEASE RSVP BEFORE WEDNESDAY, NOVEMBER 18.

THANKS

MARK

ENVIRONMENTAL SCANNING WORKSHOP
NOVEMBER 20, 1992

AGENDA

12:00 p.m.	Buffet Lunch
12:30 p.m.	Opening Remarks Presentation of Delphi Results Group Discussion
1:00 p.m.	Break Into Small Groups Write Recommendations
2:15 p.m.	Report on Recommendations to the Full Group
3:00 p.m.	Adjourn

RECOMMENDATION WRITING

Now the fun begins. Today's goal is to formulate recommendations around the issues previously discussed. You will be given 2-3 issues which were among the top 9 in the Delphi Survey. As you formulate your responses, we ask that you be

creative

innovative

AND

anticipatory

!!!

DIRECTIONS: Each group should select one recorder and one reporter. Take a few minutes to think about the issue and then respond individually to the questions below. When you are finished, discuss your ideas among the group. Continue the discussion until consensus has been reached concerning the recommendations for that issue. Have the recorder write the final responses on the large sheets of paper provided. Repeat the process with the next issue. After each group has completed its recommendations, the reporter will share them with the entire group.

These questions are provided as a starting point for the construction of your recommendations. If you have other ideas -

DON'T LET THE FORMAT INHIBIT YOU - WRITE THEM DOWN!

I. What should the School of Occupational Education at GRCC do about this issue?

II. How should this recommendation be carried out?

III. When should this occur?

If you finish with your assigned issues and would like to pick another, go for it. You may select another one from the top 9 or one from the remaining 7.

Use the sheets provided on the following pages for your individual thoughts and group discussion.

ISSUE NUMBER: _____

ISSUE: _____

_____

_____

DIRECTIONS: Each group should select one recorder and one reporter. Take a few minutes to think about the issue and then respond individually to the following questions. When you are finished, discuss your ideas among the group. Continue the discussion until consensus has been reached concerning the recommendations for that issue. Have the recorder write the final responses on the large sheets of paper provided. Repeat the process with the next issue. After each group has completed its recommendations, the reporter will share them with the entire group.

I. What should the School of Occupational Education at GRCC do about this issue?

II. How should this recommendation be carried out?

III. When should this occur?

TO:

FROM: Mark P. Champion

DATE: November 23, 1992

SUBJECT: Environmental Scanning Analysis Session Three

****

Thank you for attending Friday's workshop. Your continued interest and involvement in the environmental scanning project has made this a very enjoyable endeavor.

Your recommendations will go to the steering committee this week. We will put the recommendations into final draft form and then return them to you for comment. After your comments are received, the recommendations will be revised and sent to Dr. Peters. We feel that this process will give you as much opportunity for input as possible. You will receive a copy of the final recommendations.

As the joint project between MSU and GRCC comes to a close several things will occur:

1. An Environmental Scanning for Occupational Education Facilitator's Guide will be completed. The purpose of this guide is to give direction to others interested in beginning an environmental scan. The facilitator's guide will be distributed to the 28 community colleges in Michigan as well as other interested individuals.

2. A summative evaluation will be done for two purposes: Documenting the value environmental scanning adds to the occupational education planning process and eliciting suggestions for improving our efforts. I will be asking each of you to assist me in this process.

3. Shortly after the second semester begins, we would like to get together for a final session in which we could celebrate and recognize your efforts.

Thank you again for the value you added to the environmental scanning process.

NOTE: If you haven't filled out an evaluation, I have included one. Please return to me.

A10-270

TO:

FROM: Mark P. Champion

DATE: November 23, 1992

SUBJECT: Environmental Scanning Analysis Session Three

****

We are sorry you could not join us for Friday's workshop. Enclosed are the materials distributed at the meeting. The session was very successful leading to recommendations for the issues which emerged as the top 9 (importance) in our recent Delphi Survey.

Those recommendations will go to the steering committee this week. We will put the recommendations into final draft form and then return them to you for comment. After your comments are received, the recommendations will be revised and sent to Dr. Peters. We feel that this process will give you as much opportunity for input as possible. You will receive a copy of the final recommendations.

As the joint project between MSU and GRCC comes to a close several things will occur:

1. An Environmental Scanning for Occupational Education Facilitator's Guide will be completed. The purpose of this guide is to give direction to others interested in beginning an environmental scan. The facilitator's guide will be distributed to the 28 community colleges in Michigan as well as other interested individuals.

2. A summative evaluation will be done for two purposes: Documenting the value environmental scanning adds to the occupational education planning process and eliciting suggestions for improving our efforts. I will be asking each of you to assist me in this process.

3. Shortly after the second semester begins, we would like to get together for a final session in which we could celebrate and recognize your efforts.

Thank you again for your continued interest and involvement in the environmental scanning project. Your participation has made this a very enjoyable endeavor.

Thanks!

Environmental Scanning for Occupational Education
Analysis Session 3

Evaluation: In order that we may improve the effectiveness of each analysis session we ask that you evaluate the following areas. With the use of the following scale, please rate the statements below.

1 - *Agree* **2** - *Somewhat Agree* **3** - *Neither Agree or Disagree*
4 - *Somewhat Disagree* **5** - *Disagree*

A. Content Relevance

____1. The presenters were knowledgeable about the planned activity.

____2. The goals of the session were clearly evident.

____3. The session was current valuable and useful.

____4. Examples and illustrations used, help to clarify the activity.

B. Organization and Planning

____5. It was evident that the presentation was organized and well prepared.

____6. Material was presented in a systematic manner.

____7. Handouts were of good quality and useful.

____8. The time allotted for discussion and group interaction was adequate.

C. Group Interaction

____9. My questions about the topic were readily answered.

___10. The presenters encouraged adequate group interaction.

D. Physical Facilities and Logistics

___11. The environment was conducive to doing the planned activities.

___12. Food and refreshments were satisfactory.

___13. Break times were adequate.

___14. The time allotted for the session was adequate.

E. Understanding

___15. I have a good understanding of environmental scanning and its use in assessing the future needs of occupational education.

___16. I feel that environmental scanning is a valuable addition to the occupational education planning process.

Comments:
Please place additional comments on the back of the form - THANK YOU. Please return to Mark Champion.

Appendix 11: Final Recommendations

FINAL RECOMMENDATIONS

ENVIRONMENTAL SCAN FOR THE SCHOOL OF OCCUPATIONAL EDUCATION AT GRAND RAPIDS COMMUNITY COLLEGE

Submitted to:

Dr. Till J. N. Peters
Dean of Occupational Education
Grand Rapids Community College

January 29, 1993

A Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area

A Joint Project of Grand Rapids Community College and

A11-276

FINAL RECOMMENDATIONS
ENVIRONMENTAL SCANNING FOR OCCUPATIONAL EDUCATION

Introduction:
The following recommendations are the culmination of an environmental scanning pilot conducted for the School of Occupational Education. The purpose of the scan was to identify future jobs and job skills for the Grand Rapids Community College (GRCC) service area. It was hoped that a better understanding of the emerging job market would facilitate and improve the planning of occupational education.

The environmental scan was conducted from February until November of 1992 by administrators, faculty, and staff at GRCC. In addition, leaders from the community, business, and education, including Michigan State University (MSU) actively contributed to the collection and analysis of information about the region which GRCC serves.

The majority of information was received from a group of 25 scanners who read and abstracted current print media, including area newspapers, reports, and magazines. In addition, information from conference topics and radio and television programs was collected and summarized. This information was shared and analyzed by the entire group of scanners. This process created a list of 150 issues from over 200 different sources. As the scan progressed, the issues were combined and prioritized as to their likelihood of impacting occupational education. It is from this larger group of issues that the top 15 issues most likely to impact occupational education emerged. In an attempt to validate the current data and to gather further information about these issues, a Delphi survey was conducted and administered by FAX in two rounds to a panel of community and business leaders as well as a group of local and MSU educators. The panel rated the issues as to their importance and level of urgency to occupational education at GRCC. The following recommendations revolve around the top nine issues which were rated the highest by the Delphi panel.

The format of the recommendations contains a summary of the issue or issues. Each summary reflects the synthesis of information gleaned from abstracts, discussions, analysis, comments, and presentations during the scan. Each of the nine issues is then followed by specific recommendations. The first three issues have been grouped under one summary entitled "Responding to the Changing Work Force." The next three issues have also been grouped into a theme called "The Quality Paradigm." The remaining issues are presented singly and concern the following subjects: "The Global Market," "The Work Force's Changing Face," and "Anticipating Our Future."

These recommendations are built on the thoughts and advice of the environmental scanning team and its steering committee, and written by the project coordinator. The following recommendations have been submitted to the Dean of Occupational Education at Grand Rapids Community College.

RESPONDING TO THE CHANGING WORK FORCE
A Summary

The regional economy and workplace continue to be influenced by an unrelenting restructuring process. Plant closings, lay-offs, introduction of new technology to replace repetitive tasks, downsizing of manufacturing jobs, and the continued movement to service oriented jobs are common media topics. Organizations are competing in a global market place. This requires flexibility, quality processes, and cross functional teams that are able to meet international quality standards (ISO 9000). Success in the service sector requires the continued leveraging of technology, reduced cycle time for products and services, as well as a creative and innovative work force.

Clearly, it is not enough to know that these changes are occurring. At the community college a planned strategy to deal with current and anticipated changes in the workplace is vital. Also, there is a recognition that the one year/two year program format may not be flexible enough to meet the continuously changing needs of the future work force. It is becoming increasingly important not only to recognize, but to be able to respond in a timely manner to the multifaceted and ever changing needs of the customer.

In order to respond to this multidimensional nature of training for future occupational skills it is essential to analyze the present situation; the entire learning continuum at the college needs to be examined. It is no longer acceptable to see the customer as just the degree seeking student completing a specific occupational program. The continuum of learning, from the student who takes one course to improve a work skill to the student completing an occupational program wishing to transfer to a four year institution, must be taken into consideration.

Issues 1, 2, and 3 have been grouped together because they all deal with one issue: training and retraining workers. This is a multifaceted task requiring action at several levels. First, efforts to further define the changes in the work force should be made. Next the creation of new curricula and revision of the existing curricula are needed. In order to truly meet the needs of the future worker, this revision must stress the dissolution of the boundaries between liberal arts and occupational education. Finally, the use of technology in educational reform will be necessary at two levels: 1) leveraging technology to better train and educate the work force and 2) remaining current with the technology that the work force will use to do their jobs.

The School of Occupational Education at GRCC should continue to improve its role in assisting regional business and industry in training and retraining their employees. The recommendations for each individual issue included in the Work Force cluster are presented directly after each specific issue.

Issue 1

Changes in the workplace (layoffs, technological replacement of workers, downsizing of large manufacturers) are requiring technology and other training and retraining.

Recommendation

The Instructional Council should identify the systems, processes, and internal and external customer requirements for learners seeking short term and long term training at Grand Rapids Community College. For the purpose of improving the training and retraining delivery system the project should involve, at minimum, representatives from Occupational Education, Liberal Arts, Continuing Education, CCOT, and Business and Technical Training.

The Council should consider the following areas:

1.1 Creation of an awareness of the interrelatedness between the manufacturing, service and emerging information sectors, through continuously monitoring and broad dissemination of economic and workplace factors which directly and indirectly affect the need for training and retraining.

1.2 Creation of an interdisciplinary, cross-college team to study the learning continuum at GRCC. This team should consist of individuals from the liberal arts and sciences, those involved in job skill specific training as well as occupational education. Considerations in the study should include but are not limited to students who attend GRCC pursuing:

A. training and retraining needs either through their own initiative or as part of a company sponsored program

B. long term and short term occupational goals

C. transfer credits to continue at a four year institution

D. job specific skills not necessarily leading to a degree

E. life-long learning goals

1.3 A follow-up study of non-degree seeking learners (students enrolled in courses, but not seeking any particular degree) at Grand Rapids Community College with the goal of identifying their special needs. This should include a study of the continuum of learning options from structured instructor led courses to open entry/open exit opportunities necessary to meet them.

1.4 A coordinated staff development program which provides continuous and innovative opportunities for faculty enrichment related to technological changes in the workplace.

1.5 Development of a systematic process for conducting research on emerging technologies.

Issue 2

Curricular changes are needed in education in order to respond to rapidly changing business, industrial, and economic needs.

Recommendations: Based on these present and future realities it is recommended that Grand Rapids Community College:

2.1 Study the current occupational education curriculum to examine/determine the relevance of the current needs to the needs of the customers. (See Issue 1, Recommendation II) The involvement of advisory committees, observation of classroom and laboratory teaching and learning, and feedback from business, industry, faculty, students and graduates should be included.

2.2 Study current Liberal Arts and Sciences curriculum with the intent of exploring ways to integrate skill related to occupational training and education. The reverse should also take place with the intended goal of dissolving the traditional division between Occupational and Liberal Arts.

2.3 Explore options in alternative delivery of the curricular content. This should include but not limited to:

A. Individualized instruction

B. Open entry/Open exit

C. Marriage of traditional occupational programs to non-degree training programs

D. Technology to facilitate individualized training

E. Emphasis on a team approach to training (education)

F. Flex schedules, flex time, no semesters, more responsive systems

G. Choices: recognize different "realities" of students in the learning system (diverse student population deviating from the 18 - 20 year old "typical" student)

H. Building learning skills with a TQM approach

I. College businesses operated by students

Issue 3

Computers and other technological innovations must play a major role in educational reform.

Recommendations: Given the tremendous curricular and classroom delivery changes which must occur to prepare the future work force, it will be necessary for GRCC to leverage current and future technologies to meet those needs. This should be done by:

3.1 Demonstrating leadership in technological innovations through the development of Learning Technology Teams which would explore, present and integrate new technologies into the classroom.

3.2 Establishing school-wide computer/technology access for faculty, students, staff, administration.

3.3 Creating a Distance Learning Task Force to explore and expand distance learning technology.

3.4 Using technology to facilitate studies, enable curricular changes and provide alternatives to curricular delivery in the classroom.

THE QUALITY PARADIGM
A Summary

Issues 4, 5 and 6 have total quality management (TQM) as the central theme. As the environmental scan progressed, the call for quality in education occurred frequently. Public and governmental entities demand accountability in higher education and in turn the skill level necessary to meet those demands continues to rise. The quality issue seems to have no boundaries. TQM principles are applied to service and manufacturing sectors and, in some cases, even to government. The print media's obsession with quality was confirmed when the surveys from the Delphi panel of community and faculty experts were reviewed. Their responses to the quality issues validated the demand for the new paradigm in business and education.

The emphasis of the quality recommendation takes on a somewhat different direction in our scan. Rather than continuous quality improvement as a management tool, we see such principles needed at the classroom level. Such quality standards and tools at this level will enable students to take charge of their own learning. In order to achieve this goal, faculty and staff must be given the tools to implement quality in the classroom. This will necessitate a staff development process aimed at infusing quality concepts into the teaching/learning process.

An interesting assumption has been made by those responding to the Delphi survey: "You can't have quality workers, if those workers don't have a set of basic skills." These basic skills have changed over the past ten years to include competencies in problem solving and computer skills to name just a few. The environmental scan did not identify any one particular job, but the skills such as those mentioned above will be necessary for all workers in the Information Age. Preparing the information worker for the jobs of today and of tomorrow will require this set of requisite skills. Therefore, the recommendations combine the quality issues with those of basic skills needed for the information worker. A set of core competencies should be taught in all occupational programs to ensure that students grasp these competencies which will be necessary to achieve quality in the workplace. The following themes govern the recommendations:

- GRCC is to be recognized as a quality institution
- Therefore, all necessary skills need to be integrated with elements of quality.

The recommendations for each individual issue included in the Quality grouping are presented directly after that issue.

Issue 4

Emphases on quality, participatory management, customer satisfaction, and education are key to successful businesses.

Recommendations: Based on these present and future realities it is recommended that Grand Rapids Community College focus on two areas:

- Development and training of faculty and staff in order to meet the need for the infusion of quality principles at the classroom level.
- Students taught quality principles in the classroom.

4.1 A staff development process is required in order to assure that quality is imbedded in all aspects of student conduct from first entering the institution through the time in which the student leaves the institution. Staff development should focus on:

A. Quality issues in terms of the student

B. Integration of quality concepts and tools into the curriculum for use by the student

C. Learning and teaching how to change

D. Integrating quality concepts into all facets of the college work life

4.2 Students should be taught the quality paradigm at every opportunity.

A. Establish quality outcomes or standards of excellence

B. Establish new grading system (e.g. A,B,I)

C. Enable students to take charge of their learning system by:

1. the use of quality tools in the learning process

2. teaching team building skills

4.3 A pilot program with the above attributes should be established at the course or program level.

Issue 5

The increased level of interest of employers and government in the quality & level of training of the work force will require a like interest among community colleges.

Recommendations: Based on these present and future realities it is recommended that Grand Rapids Community College focus on:

5.1 Developing measurement tools to assess the quality of our students.

5.2 Working with employers/government/customers to determine expectations for quality standards in order to respond quickly to their changing needs.

A. Assess the role of the advisory committees to include increased communication between college and employers

B. Promote college staff to serve on government and business policy making bodies

Issue 6

Demands by the public to ensure basic academic skills and problem solving abilities among students leaving higher education programs will increase.

Recommendations: Continue to work on general learner outcomes and specific learner outcomes for the information worker. Integrate these recommendations into all learning activities and infrastructure of the college.

6.1 Develop core competencies for the information worker

- A. Communications
- B. Math
- C. Reading
- D. Computer skills
- E. Problem solving
- F. Business skills
- G. Team building
- H. Lifelong learning

6.2 Establish more flexible systems for attainment of education and training.

- A. Unlimited time to complete work
- B. Open entry/Open exit
- C. Skill based modules

THE GLOBAL MARKET
A Summary

It is difficult to deny the emergence of the global market. The prevalence of news stories on the international, national and even state level point to the eventuality of a global economy. This leads to the question: does the global market affect GRCC and the community it serves?

The project monitored the titles in the Grand Rapids Press Business Section over a six month period and found that 15% of the articles pertained to area businesses involved in joint ventures and mergers with overseas companies. Over 35 area businesses are owned and operated by international companies; "The Right Place" estimates that over 300 local businesses are involved in international trade.

The global market is present in West Michigan and gives rise to many unique opportunities for the college to meet the needs of such an economy. It will, therefore, be necessary to direct energy into creating a college culture ready to respond to the globalization of the economy.

Issue 7

United States policy and programs will be affected ever increasingly by global markets.

Recommendations: Based on these present and future realities it is recommended that Grand Rapids Community College:

7.1 Broaden the focus of all program offerings from that of the Grand Rapids region to a national/international focus. Compare our products (students) to international standards.

A. Study content of current curriculum to include global content

B. Identify global market knowledge centers at the institution (Business, economics, cultures, cross disciplinary)

C. Offer cultural diversity training/awareness to GRCC staff and students

D. Globalization should be a continuous, ongoing process which is integrated into the institution's strategic plan

7.2 Provide students with the Globalization Learner Outcomes which are applied to the entire institution. These should include:

A. Knowledge of U.S./World economic and political policies

B. An awareness of cultural diversity

C. Strategies for doing business in Mexico, Canada, Asia, Russia, Eastern Europe, and the Middle East

D. Foreign language and cultural studies integration into occupational programs

THE WORK FORCE'S CHANGING FACE
A Summary

All indicators point to the fact that the majority of persons entering the work force by the year 2000 will be made up of females and nonwhites. By the year 2000, 61% of women of working age will be in the work force. As we enter the 21st century, native ethnic minorities will make up 29% of work force entrants; immigrants will represent the largest share of the work force entrants since the first World War. Women, nonwhites, and immigrants will make up 83% of the net increases in the work force between 1987 and the year 2000.

This influx of new workers will continue as America's worker force switches from low skilled to high skilled jobs resulting in an anticipated skill gap. The student coming to Grand Rapids Community College for education and training will be much different than the student attending ten years ago. GRCC has the opportunity to meet the needs of that future work force and should, therefore, pay close attention to the demographic makeup of students in occupational training programs. Recruitment and retention of females and ethnic minorities should be a priority. This will necessitate the continued training of faculty and staff in the issues of cultural diversity. The continued entrance of women into the workplace will create issues surrounding work/family conflicts. As area businesses look for child care options, GRCC should become a leader in training workers to meet those needs.

Issue 8

Increased minority and female participation in the work force will demand issues of child care, pay equity and nontraditional job opportunities to be seriously addressed.

Recommendations: Based on these present and future realities, it is recommended that Grand Rapids Community College:

8.1 Be a model in terms of pay equity, non-traditional job opportunities, and the provision of child care for faculty, staff, and students.

8.2 Have a strong recruitment and retention program to channel students into and keep them in non-traditional occupational program areas.

8.3 Expand the college child care services to provide evening/weekend services.

8.4 Expand training programs for child care.

ANTICIPATING OUR FUTURE
A Summary

The eighteen month pilot at GRCC has been a valuable experience for all of those involved. It appears to be an activity in which the process is just as important, if not more important than the outcomes. Arie P. De Geus, head of planning for the Royal Dutch/Shell Group sees planning as learning. "Learning is not a luxury. It's how companies discover their future." This "planning" process has brought GRCC faculty from occupational education and liberal arts together, as well as a number of administrators. It has also included valuable contributions from business and community members, university experts, and secondary vocational educators.

The bringing together of these various entities with the intent of discovering the future has given all those involved a new perspective and serves as a catalyst for needed change. An awareness of the external environment brings us closer to the community which we serve. The interdisciplinary team breaks down the traditional divisional boundaries between liberal arts and occupational education. This creates a more unified focus on meeting the needs of the future worker and strengthens the vision of Grand Rapids Community College.

Issue 9

Community colleges must be able to anticipate the future.

Recommendations: With these tangible benefits in mind the steering committee submits the following recommendations:

9.1 Continue environmental scanning as part of the planning process of the School of Occupational Education.

A. Broaden the involvement of faculty and staff in the environmental scanning process. Open scanning to Liberal Arts, and Continuing Education for example:

1. Provide mentoring experiences for those interested in becoming part of scanning process

2. Explore a college-wide scanning process as input to overall strategic planning

B. Make the scanning process more effective/efficient

1. Leverage technology in order to:

   a. decrease meeting time
   b. efficiently collect, analyze and disseminate environmental scanning data
   c. provide on-line data base searches on focus topics

2. Widen GRCC network access:

   a. at the college in order to broaden the involvement of all faculty and staff
   b. at home in order to facilitate data collection and dissemination of information

9.2 Involve faculty in defining "anticipating the future" in order to help the College anticipate that future as a team.

A. Create an "anticipatory" college culture by:

1. Engaging faculty and staff in an ongoing dialogue about the future through:

a. study groups around future topics
b. subscribing to futures publications
c. hosting programs on futures studies

9.3 Continue dialogue and establish partnerships with the community leaders, and area business and industry beyond traditional advisory committees with a goal of anticipating their needs.

A. Faculty in the workplace program

B. Continue to maintain and establish new local and regional data sources

Appendix 12: Summative Evaluation Report

RESULTS OF
A SUMMATIVE EVALUATION OF THE
ENVIRONMENTAL SCANNING PROCESS
FOR OCCUPATIONAL EDUCATION

Results: Below is a compilation of the data received from the survey. Thirty questionnaires were sent and 19 were received. Response rate was 63%. The mean response for each question is listed next to that question. In addition, the mean response for each sub-group is listed after the group title. Frequency rate of response is given below each question where appropriate. Values may not add up to 100% due to rounding.

Rating Scale: **1** - *Agree* **2** - *Somewhat Agree* **3** - *Neither Agree or Disagree*
4 - *Somewhat Disagree* **5** - *Disagree*

A. Organization and Planning - Group Mean = 1.26

	Mean	
1.	1.22	It was evident that the environmental scanning process was organized and well planned.

1 Agree	73.7%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

2. 1.32 It was evident that the environmental scanning process was well executed.

1 Agree	68.4%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	0.0%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

3. 1.32 Printed materials were of good quality and useful.

1 Agree	68.4%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	0.0%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

B. Execution of the Process - Group Mean = 1.19

4. **Mean**
1.44 The Kick-off Session was helpful in explaining the principles of environmental scanning.

1 Agree	52.6%
2 Somewhat Agree	42.1%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

5. 1.59 The Analysis Sessions were worthwhile.

1 Agree	36.8%
2 Somewhat Agree	52.6%
3 Neither Agree or Disagree	10.5%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

6. 2.00 The process of concept mapping seemed to add value to the process.

1 Agree	36.8%
2 Somewhat Agree	26.3%
3 Neither Agree or Disagree	21.1%
4 Somewhat Disagree	10.5%
5 Disagree	5.3%

7. 1.47 The multivoting process seemed to add value to the process.

1 Agree	42.1%
2 Somewhat Agree	36.8%
3 Neither Agree or Disagree	21.0%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

8. 1.40 Small group discussion and communication with faculty and staff in diverse areas seemed to add value to the process.

1 Agree	47.4%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	21.1%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

9. 1.47 The Delphi survey and the process of eliciting external input was valuable.

1 Agree	57.9%
2 Somewhat Agree	15.8%
3 Neither Agree or Disagree	21.1%
4 Somewhat Disagree	0.0%
5 Disagree	5.3%

10. 1.31 The Recommendation Writing Session was valuable.

1 Agree	47.4%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	31.6%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

11. 1.35 The final recommendations reflected the information that was collected and analyzed in the scan.

1 Agree	68.4%
2 Somewhat Agree	15.8%
3 Neither Agree or Disagree	10.6%
4 Somewhat Disagree	5.3%
5 Disagree	0.0%

C. **Communication - Group Mean = 1.27**

Mean

12. 1.31 The basic principles of environmental scanning were conveyed to me in a way that was easy to grasp.

1 Agree	57.9%
2 Somewhat Agree	26.3%
3 Neither Agree or Disagree	15.8%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

13. 1.32 Communication about the activities involved in the scan was maintained.

1 Agree	68.4%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	0.0%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

14. 1.33 Reports of the analysis sessions were helpful.

1 Agree	63.2%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

15. 1.41 The newsletter ***SCANOTES*** was helpful in keeping me informed of the scanning process.

1 Agree	52.6%
2 Somewhat Agree	36.8%
3 Neither Agree or Disagree	10.6%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

16. 1.60 ***TITLE WAVES*** was helpful in enabling me to quickly scan the Grand Rapids Press.

1 Agree	31.6%
2 Somewhat Agree	15.8%
3 Neither Agree or Disagree	47.4%
4 Somewhat Disagree	5.3%
5 Disagree	0.0%

17. 1.35 My questions about environmental scanning were readily answered.

1 Agree	57.9%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	10.6%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

18. 1.39 Adequate group interaction was encouraged during the scanning meetings.

1 Agree	68.4%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	5.3%
5 Disagree	0.0%

19. 1.22 The project coordinator provided adequate feedback concerning my questions about the scan.

1 Agree	73.7%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	0.0%
5 Disagree	0.0%

D. **Relevance - Group Mean = 1.74**

	Mean	
20.	1.89	The environmental scanning process is a worthwhile endeavor.

1 Agree	47.4%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	10.5%
5 Disagree	5.3%

21. 1.67 The goals of the process were clearly evident.

1 Agree	52.6%
2 Somewhat Agree	31.6%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	10.5%
5 Disagree	0.0%

22. 2.06 The environmental scanning process was valuable and useful to me.

1 Agree	47.4%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	10.5%
4 Somewhat Disagree	10.5%
5 Disagree	10.5%

23. 1.78 The information which emerged from the scan will be valuable in the occupational education planning process.

1 Agree	47.4%
2 Somewhat Agree	36.8%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	5.3%
5 Disagree	5.3%

24. 1.69 The information which emerged from the scan will be valuable in the planning process for GRCC as a whole.

1 Agree	52.6%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	15.8%
4 Somewhat Disagree	5.3%
5 Disagree	5.3%

25. 2.06 The information which emerged from the scan was valuable to me.

1 Agree	36.8%
2 Somewhat Agree	42.1%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	5.3%
5 Disagree	10.5%

E. **Logistics - Group Mean = 1.22**

	Mean		
26.	1.41	The number of meetings was adequate for facilitating the scanning process.	
		1 Agree	52.6%
		2 Somewhat Agree	36.8%
		3 Neither Agree or Disagree	10.5%
		4 Somewhat Disagree	0.0%
		5 Disagree	0.0%
27.	1.17	Food and refreshments were satisfactory.	
		1 Agree	78.9%
		2 Somewhat Agree	15.8%
		3 Neither Agree or Disagree	5.3%
		4 Somewhat Disagree	0.0%
		5 Disagree	0.0%
28.	1.50	The time allotted for the sessions was adequate.	
		1 Agree	57.9%
		2 Somewhat Agree	31.6%
		3 Neither Agree or Disagree	5.3%
		4 Somewhat Disagree	5.3%
		5 Disagree	0.0%
29.	1.17	Meeting rooms were conducive to accomplishing the intended tasks.	
		1 Agree	78.9%
		2 Somewhat Agree	15.8%
		3 Neither Agree or Disagree	5.3%
		4 Somewhat Disagree	0.0%
		5 Disagree	0.0%

F. **Understanding - Group Mean = 1.76**

	Mean		
30.	1.37	I have a good understanding of environmental scanning and its use in assessing the future needs of occupational education.	
		1 Agree	73.7%
		2 Somewhat Agree	21.1%
		3 Neither Agree or Disagree	0.0%
		4 Somewhat Disagree	5.3%
		5 Disagree	0.0%

31. 1.82 I feel that environmental scanning is a valuable addition to the occupational education planning process.

1 Agree	52.6%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	10.6%
4 Somewhat Disagree	10.5%
5 Disagree	5.3%

32. 2.00 I feel that environmental scanning should be continued at the college.

1 Agree	52.6%
2 Somewhat Agree	21.1%
3 Neither Agree or Disagree	5.3%
4 Somewhat Disagree	10.5%
5 Disagree	10.5%

33. What was the most valuable thing about the scanning process?

- The information I found while scanning that related to Occupational Education.
- Learning how to more effectively use information from many sources in program planning.
- The process encouraged positive faculty/administrator interaction. We actually sat down together and planned for the future of this college.
- Cross-unit faculty dialogue
- Inter-institutional linkages
- Commitment on the part of Drs. Olivarez and Peters
- Cross-disciplinary interaction with faculty and staff.
- Interaction and discussion.
- Group interaction.
- The involvement of faculty and the community.
- General knowledge, re: process.
- Staff involvement.
- Interaction between academic departments and with staff.
- Being involved in the process. Initiating the scanning process at GRCC.

34. What one thing could be changed to improve the scanning process?

- More time to talk with other about trends and issues.
- Careful timing of meetings, i.e., no Friday afternoons.
- Initial steering committee training.
- Addition of a librarian to steering committee.
- To what extent is the data base being used?
- Slightly better explanation up front, I personally did not have a clear understanding of purpose until the end of the second meeting.
- More focused scanning.
- You missed the point of scanning. This is so basic before scanning this reflected people in college don't talk to each other or look outward much. This wasn't future directed, but now, useful for that purpose but not a scan.
- Involvement of faculty from across the college.
- Inform people up front as to realistic time commitment.
- Greater staff involvement.
- More time for sessions, early on.
- Facilitation of the communication process with appropriate technologies. Integrating the scan process into the college foundation process.

35. In what ways, if any, will you be able to use the information and concepts you learned from the scanning process in your own work?

- Scan and search the printed material available more closely (memopaper, magazines)
- It has helped already in planning.
- Not sure at this point, mostly support ideas already being discussed in my division.
- Coordination of effects between secondary and post secondary institutions.
- The concepts will facilitate future strategic planning projects.
- Not sure if will use at this point, probably need to go through it again!
- Useful in identifying trends, overview of social developments.
- Cross college curriculum development. Validation of the learning technology and distance learning efforts and enhancements, expansions of these processes.
- Process and outcomes were used in other aspects of work: Concept mapping, multivoting process, technology approaches, video: Winds of Change, Title Waves, Scanotes, Delphi, and GRCC Recommendations.

Circle the most likely reason in the two remaining questions only if you feel they apply.

36. If you were unable to read and abstract articles, the most likely reason was:

3 a. I did not have the time to be involved.

3 b. I couldn't work it in to my routine.

0 c. I was not interested in contributing.

0 d. I did not understand the process.

2 e. Other:

- Inadequate equipment, if the college wants to get things done, faculty/staff must be cared for.
- Would like to have had time to abstract more.

37. If you were unable to attend the analysis sessions, the most likely reason was:

2 a. I did not have the time to be involved.

6 b. I had scheduling conflicts.

0 c. I was not interested in contributing.

0 d. I did not understand the process.

0 e. Other _____

COMMENTS

- I read articles regularly. Often I would clip articles to submit and never get around to highlighting or abstracting them for submission. (I know it doesn't seem as though that is a valid reason). I think Mark Champion did everything he could to make that job easier and encourage submission, but it was just one of those things that I could not work into my routine. I did, however, submit a few articles (abstracts), and I hope that my contribution was helpful. Thanks Mark, for a job well done!
- The project was too broadly based, by the time articles and other information was consolidated they were too general. Attempting to apply trends to Occupational Education is too broad. Occupational Education is not a program and does not have a curriculum to be modified. The scanning process could be helpful if applied at the program level.
- Thank you for an interesting experience. I would be willing to participate in future activities if needed.
- Believe that focus groups could be more involved in future scan activities. Believe that it would be interesting to have a sub-group of the scan steering committee that would just focus on enhancing communications and access to information through the use of technology.
- Liked the light-hearted way in which *SCANOTES* were written.
- (Recommendations were) too general
- (Continue scanning) Not unless we move off the obvious to the innovative.

Bibliography and Environmental Scanning Resources

General Resources and References for the Implementation

Callan, P (Ed.), Environmental Scanning for Strategic Leadership, New Directions for Institutional Research, Jossey-Bass, Inc.: San Francisco, CA, 1986.

Commission on the Future of Community Colleges, "Building Communities: A Vision For a New Century", American Association of Community and Junior Colleges, National Center for Higher Education: Washington, DC, 1988.

Clagett, C., "A Practical Guide to Environmental Scanning: Approaches, Sources, and Selected Techniques", Planning for Higher Education, vol. 17, no. 4, 1988-89, pp 19-28.

_____, "Scans Solo: a One-person Environmental Scanning Process", ERIC no. 305 958, 1987.

Coates, J., Issues Management: How to Plan, Organize and Manage for the Future, Lomond Publications, Inc.: Mt. Airy, MD, 1986.

Deschler, J.D., "Module 7: Techniques for Futures Perspectives", Working with Our Publics, North Carolina State University, Raleigh, NC, 1988.

Friedel, J., "Executive Summary: Survey of Environmental Scanning and Community Colleges", Eastern Iowa Community College District, 306 West River Drive, Davenport, IA 52801, 1991.

Grummon, P., "The Adoption of Technological Change: Management Issues and Practices", Paper presented at: AUTOMACH Australia, 1984, Society of Manufacturing Engineers, Sidney, Australia.

_____, Environmental Scanning for Occupational Education: A Review of the Literature and Model Development in Support of the Development of A Model for Environmental Scanning to Systematically Assess Future Occupational Needs of a Michigan Community College Service Area, Grand Rapids Community College and Michigan State University, Grand Rapids, MI 49503, 1992.

Kahn, H. and Weiner, A., The Year 2000, Macmillan: London, 1967.

Hage, J. and Aiken, M., Social Change in Complex Organizations, Random House: New York, NY, 1970.

Mecca, T. and Morrison, J., "Pathways to the Future: Linking Environmental Scanning and Strategic Management", Community College Review, vol. 15, no. 4, 1988, pp 35-44, ERIC number 291 415.

Morrison, J. "Developing an Environmental Scanning System", ERIC number 323 865, 1990.

_____, "Environmental Scanning Activities in Higher Education as Reported at the 1986 Annual Meetings of American Association for Higher Education, Association for Institutional Research, and Society of College and University Planning", ERIC number 277 317, 1986.

_____, and Held, W., "Developing an Environmental Scanning/Forecasting System to Augment Community College Planning", ERIC number 305 121, 1988.

_____, Renfro, W.L., and Boucher, W.I., Applying Methods and Techniques of Futures Research: New Directions for Institutional Research, No. 39, September, Jossey-Bass, San Francisco, 1983.

_____, Simpson, E., and McGinty, D., "The Environmental Scanning Project at the University of Georgia Center for Continuing Education", ERIC number 285 490, 1987.

Whiteley, M., Porter, J., Morrison, J., and Moore, N., "Developing Scenarios: Linking Environmental Scanning and Strategic Planning", Planning for Higher Education, vol. 18, no. 4, 1989-90, pp 47-60.

Resources For Scanning Information

On the Horizon, A scanning newsletter which identifies driving forces in the external environment which could affect colleges and universities. The University of North Carolina, James L. Morrison, CB3500 Peabody Hall, Chapel Hill, NC 27599-3500.

Look Outs, scanning newsletter from the Georgia Center for Continuing Education, University of Georgia, Athens, GA

Executive Trend Watch, Conference on Issues and the Media, 300 N. Washington St., Suite 401, Alexandria, VA 22314. A measure of use of all media space (print) and time (television) as national news. Exposure is computed by weighing media group according to where people seek national news.

Trend Letter (John Naisbitt), The Global Network, 1101 30th Street, NW, Suite 130, Washington, D. C. 20007

Future Survey, Newsletter and Annual, World Future Society, Bethesda, MD

What Lies Ahead: Countdown to the 21st Century, United Way of America, 1989

Productive America: Two-Year colleges Unite to Improve Productivity in the Nation's Workforce, AACJC National Council for Occupational Education, 1990, ERIC number ED 317 224

External Environmental Scan and Forecast, Catonsville Community College, MD, ERIC number ED 309 617

Annual Environmental Scan and Internal Resource Audit, Cuyahoga Community College, Office of Planning and Research, Cleveland, OH

2020 Perfect Vision the Next Century: An Environmental Scan, Jan Friedel, Eastern Iowa Community College District, 1989, ERIC number ED 319 451

The Top Ten Issues Facing America's Community Colleges, Institute for Future Studies, Macomb Community College, William Banach, Executive Director, 1990

Oakland Community College 1991-92 Environmental Scan: Key Trends Affecting Community College Education, Oakland Community College, Martin Orlowski, Director of Institutional Planning and Analysis, 1991

Montgomery, B. and Hesse, M., "Environmental Scanning and External Tendencies Affecting American Higher Education", Planning for Higher Education, vol. 18, no. 4, pp 61-102

The Art of Forecasting, The World Future Society, Bethesda, MD 20814

SCANNING "SPEAK-UP"

As a tool that is to be responsive and leading in both the internal and external environment, we realize that an environmental scanning model is never complete. We are interested in application and continuous improvement, so we would very much like to know how you have used, adapted, or changed this model in your setting. Please take a few moments to share your experience, process, and outcomes.

What parts of the facilitator's guide were most useful to you?

- ☐ ***Step 1 Awareness***
- ☐ ***Step 2 Assessment***
- ☐ ***Step 3 Initiation***
- ☐ ***Step 4 Implementation***
- ☐ ***Step 5 Integration***

How have you customized the process for your setting?

Institution/Agency _____

Who is involved? (position/title/name)

What mechanisms are being used for scanning, analyzing, prioritizing, and reporting information?

How have the results been used?

- ☐ ***Strategic Planning***
- ☐ ***Organizational Development***
- ☐ ***Other*** _____

What outcomes have been achieved with the overall process?

Comments:

Thank you!
Please send completed form to Lorilee R. Sandmann, Ph.D., Director, University Outreach, Michigan State University, 60 Kellogg Center, East Lansing, MI 48824
Fax: (517)336-1327 Bitnet: Sandmann@MSU.Edu

ENVIRONMENTAL SCANNING FOR OCCUPATIONAL EDUCATION

A Facilitator's Guide

Worksheet Examples & Appendices on Disk

WordPerfect files

March 1993

Supported by
Grand Rapids Community College and Michigan State University

©1993

© 1993 Gran Rapids Community College and Michigan State University. Permission to duplicate for personal use is hereby granted.

Document Contents

STEP I: Awareness WKSHTTAB.PH1

Worksheets

Establishing the Need 20

Identification of Resources I 24

Establishing A Steering Committee 30

Developing Expertise 34

Examples

EXAMPLE I: Needs Statement 22

EXAMPLE II: Participants and People to Keep Informed 26

EXAMPLE III: Resources 27

EXAMPLE IV: Steering Committee-Major Responsibilities 31

EXAMPLE V: Project Coordinator-Major Responsibilities 32

EXAMPLE VI: Environmental Scanning Resource List 35

STEP II: Assessment WKSHTTAB.PH2

Worksheets

Determining the Focus of the Scan 38

Identification Of Resources II 43

Establishing a Time Line 48

Examples

EXAMPLE VII: Purpose and Focus 39

EXAMPLE VIII: Resources Available/Needed 45

EXAMPLE IX: Time Line 49

STEP III: Initiation WKSHTTAB.PH3

Worksheets

Introducing The Environmental Scanning Process 54

Abstract Form Construction 61

Print Media Considerations 66
Scanning Team Selection 71
Kick-Off Planning 75

Examples

EXAMPLE X: Introduction to Scanning Information Sheet 55
EXAMPLE X: Introduction to Scanning (Cont.) 56
EXAMPLE XI: Abstract Form 62
EXAMPLE XII: Print Media Survey 68
EXAMPLE XIII: Scanning Team 72
EXAMPLE XIV: Kick-Off Event Agenda 76

STEP IV: Implementation WKSHTTAB.PH4

Worksheets

Kick-Off Checklist And Follow-Up 81
Abstract Form Modification 85
Data Base Set-Up And Data Entry 91
Monitoring and Troubleshooting 96
Analysis Session Planning 102
Establishing A Communications Network 107
External Validation Methods 112
Recommendation Writing 116

Examples

EXAMPLE XV: Kick-Off Session Evaluation 82
EXAMPLE XVI: Taxonomy for Abstract Form 86
EXAMPLE XVII: Abstract Form Key 87
EXAMPLE XVIII: Sample Data Base Report 92
EXAMPLE XIX: Abstract Thank You/Abstract Receipt Report 97
EXAMPLE XX: Summer Scanning Flier 98
EXAMPLE XXI: Analysis Session Planning Sheet 104

EXAMPLE XXII: Title Waves Excerpt 108
EXAMPLE XXIII: Concept Map Results Excerpt 109
EXAMPLE XXIV: Delphi Results Comparison 109
EXAMPLE XXV: Recommendation Writing Agenda 117
EXAMPLE XXVI: Draft Recommendation 118

STEP V: Integration WKSHTTAB.PH5

Worksheets

Evaluation And Refinement 122
Institutionalize The Process 129
Start A New Cycle 133

Examples

EXAMPLE XXVII: Summative Evaluation 124
EXAMPLE XXVII: Summative Evaluation (Cont.) 125
EXAMPLE XXVII: Summative Evaluation (Cont.) 126
EXAMPLE XXVII Summative Evaluation (Cont.) 127
EXAMPLE XXVIII: Recommendation for Anticipating the Future 130
EXAMPLE XXIX: Recognition and Starting a New Cycle 134

Appendix 1: Model Characteristics APPENDX1.FAC
Appendix 3: Time Line APPENDX3.FAC
Appendix 4: Kick-Off Materials APPENDX4.FAC
Appendix 6: Analysis Session Materials APPENDX6.FAC
Appendix 9: Delphi Materials APPENDX9.FAC
Appendix 10: Recommendation Writing Materials APPEND10.FAC
Bibliography and Environmental Scanning Resources . . . . . BIBLIOGR.FAC
Scanning Speak-Up . . . . . SPEAKUP.FAX